



**Province of British Columbia
Ministry of Health**

**PUBLIC HEALTH
LABORATORY
MANUAL of SERVICES**

**A Guide to the
Collection and Submission
of Specimens**

April 1989

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Please note: There is an error in the section "Interpretation of Virology Reports", Rubella Serology. Page 20, Line 4 of the first paragraph should read as follows: "If the value for the **convalescent** sample is less than 1.00.... Please amend your copy appropriately.

April 1989

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BRITISH COLUMBIA PUBLIC HEALTH LABORATORY MANUAL OF SERVICES: A GUIDE TO THE COLLECTION AND SUBMISSION OF SPECIMENS

INTRODUCTION

Since the quality and service depends upon the integrity and timeliness of the specimens submitted, this manual is distributed to reflect current activities and proper specimen and collection-handling procedures.

Every attempt has been made and will continue to be made to make the manual readable and useful and we welcome suggestions to this end.

All physicians should be aware that the diagnosis and control of communicable disease is the statutory responsibility of the Minister of Health (Regulations for the Control of Communicable Diseases B.C. Reg. 187/83).

The main Provincial Public Health Laboratories are located in Vancouver, two Branch Laboratories are in Nelson at the Kootenay Lake District Hospital and in Victoria at the Royal Jubilee Hospital. These laboratories provide public health laboratory services to health units, hospitals and physicians.

Branch Laboratory
Provincial Laboratory
Department of Pathology
Royal Jubilee Hospital
1900 Fort Street
Victoria, B.C.
V8R 1J8
595-9303

Branch Laboratory
Provincial Laboratory
Kootenay Lake & District Hospital
3 View Street
Nelson, B.C. V1L 2V1
352-3111

Provincial Laboratory
B.C. Centre for Disease Control
828 West 10th Avenue
Vancouver, B.C.
V5Z 1L8
660-6070

GENERAL INFORMATION

Hours:	8:30 a.m. - 4:30 p.m. (Drop box for specimens after 4:30 p.m.)	
Telephone:	660-6070	
Facsimile (Fax) Number:	660-6066	
Headquarters Telex Number:	049-7462	
Enquiries:		
General Services/Administrative:		660-6070
Medical Consultation:		
	General	660-6030
	Parasitology	660-6004
	Virology	660-6044

On-Call Medical Microbiologist. Call our 24 hr. answering service 661-7033 and leave your name, telephone number and brief message. Your call will be returned.

Answering Machine for routine out-of-hours request: (604) 660-6082.

Weekdays: From 1630 hours to 0830 hours the following day

Weekends: From 1630 hours Friday to 0830 hours Monday

LABORATORY SECTIONAL DIRECTORY

	TELEPHONE
Answering Machine — Messages (after hours)	660-6082
Executive:	
Director — Dr. J.A. Smith, F.R.C.P. (C)	660-6030/1/2
Medical Microbiologist, Virology	660-6044
Medical Parasitologist, Office	660-6004/5
Associate Director/Admin.	660-6071
Scientific/Technical & Support Areas:	
Administration, Secretary	660-6070
Administration, Accounts	660-6072
AIDS Lab	660-5061
Director's Office, Secretary	660-6030
Electron Microscopist	660-6042
Enteric, Supervisor	660-6058
Enteric, Laboratory	660-6059
Food Poisoning	660-6079
General Bacteriology, Supervisor	660-6078
General Bacteriology, Lab	660-6003
Hepatitis	660-6040
Maintenance	660-6038
Media	660-6049
Mycology	660-6057
Outfits	660-6033
Parasitology, Supervisor	660-6055
Proctor, Dr. E.M. — Lab. Rm 405	660-6048
Shipping	660-6035
Specimen Receiving	660-6033
Stockman	660-6034
Technical Support, Supervisor	660-6051
Training & Development, Supervisor	660-6075
Training & Development, Staff & Lab 4th Flr.	660-6046
Tuberculosis, Supervisor	660-6056
V.D. Serology, (Non-Viral), Supervisor	660-6054
Virology, Supervisor	660-6045
Virus Isolation	660-6080
Virus Serology	660-6041
Washup	660-6050
Water Bacteriology, Supervisor	660-6037

MEDICAL MICROBIOLOGISTS

Microbiologist	Pager No.	Office Phone	Home Phone
Dr. J.A. Smith (Director)	875-5000 Pager 03341	875-4631	946-8499
Dr. I.W. Geere	875-5000 Pager 03336	875-4111 Loc. 3833	943-9348
Dr. M.T. Kelly	875-2161 Pager 4744	875-2379	228-1220
Dr. J. Isaac-Renton	875-5000 Pager 03337	875-4432	224-3664
Dr. P.J. Middleton	875-5000 Pager 03351	660-6044	263-2793
Dr. W.A. Black		660-6029	266-3609

LABORATORY TURNAROUND TIME

Most laboratories such as ours receive frequent criticism concerning the seemingly long time interval from specimen collection to reporting of results.

There are certain categories of procedures where the time required for such reporting can be decreased and these are being instituted. Other procedures are being reviewed with an intent to develop a more efficient manner for processing the specimen and still maintain the quality of service. There are some unique characteristics of a public health/reference laboratory that should be addressed, not as excuses for less than optimal turnaround, but to define our arena of activity:

Geographical — As a service covering the entire Province, many specimens travel long distances to reach our Laboratory. All means of transportation are routinely employed. The fastest means of delivery may not be immediately or locally available for delivery the same day that the specimen for testing is ready for shipment. It can readily be seen that this system is more lengthy than that employed to transport a specimen through a hallway, by elevator or across town. Users of our services are urged to investigate all forms of shipment available in their respective areas to find the most efficient means of transport. (See Delivery & Transportation of Specimens).

Chronological — The moment a specimen is collected various forms of deterioration begin. Transport outfits are meant to stabilize the contents (or selectively enrich certain constituents) during transport, and improvements are continuously being sought and investigated to accomplish this objective. Nevertheless, specimens, particularly biological specimens may be compromised during transit, and procedures to resuscitate the organisms of interest add extra steps to the identification sequence. Referred cultures are not immune from this problem. During transit any contaminant may reproduce along with or inactivate the referred organism, resulting in the obvious laboratory test problems.

Cultural — Many of the specimens we receive are unique events — organisms not identifiable by routine biochemical procedures or keenly fastidious in their nutritional requirements. The desired goal to differentiate and study the organism(s) significant for each situation may take days or weeks. Considerable time is necessary to identify cytopathogenic effect in a cell culture inoculated with a suspected virus or to obtain visible growth in mycobacterial culture systems. Reference cultures sent to the Laboratory are normally those beyond the scope of local laboratory testing, because of volume or availability of test systems. Complicated schema and test sequences may be necessary to identify such cultures. In some rare cases, the culture must be forwarded to the Laboratory Centre for Disease Control, Ottawa or Centre for Disease Control in Atlanta for more highly specialized testing, adding to the perceived turnaround time. Procedures currently employed in our laboratories are constantly under review and are compared with newer methods, as they arise, to decrease the time required for testing. Rapid methods are being developed for partial or complete identification of the most common pathogens. These systems may provide quick preliminary and therefore presumptive results on an acute condition, but there is usually a tradeoff in the forms of decreased sensitivity or specificity for a given specimen. As the reliability of such methods is verified, they are usually adopted to attain savings in time. The laboratory however, does have the obligation to employ procedures commonly used by other public health laboratories or recommended by LCDC or CDC so that results may be accurately compared.

DELIVERY AND TRANSPORTATION OF SPECIMENS

Local

Night Deposit Box for specimens after duty hours. Specimens must be in an acceptable specimen outfit container and be properly packed.

OR

Courier Service

Free delivery service by bonded carrier or aircraft is available from all areas of the Province through the Health Units.

OR

Mail

Specimens sent in the mail must be in a public health laboratory specimen *mailing* outfit or *properly packed to prevent leakages and damage in transit*.

SPECIMEN OUTFITS

The preparation and distribution of specimen outfits require a considerable expenditure of time and material. Our records consistently show that we send out far more outfits than are returned with specimens for testing. To control stockpiling and expiration of materials in unused outfits, we maintain records of users' average specimen volume and adjust outfit orders accordingly. If you anticipate a large increase in the need for a particular specimen outfit please annotate the order so that we can adjust our control mechanism. These measures are necessary to avoid excessive drains on our finite resources.

Availability: Mailing and non-mailing specimen outfits are issued free upon request.

Ordering: You may order supplies directly from the Provincial Laboratory. Please use requisition HLTH 1875. A new requisition will be enclosed with each order that is filled.

PHONE ORDERS ARE ONLY ACCEPTED FOR EMERGENCY SUPPLIES.

You may also order *UNASSEMBLED* outfits.

Please observe the following:

- use zip-lok plastic bags for all requisitions. They are used to protect the requisitions from specimen leakage and contamination.
- be sure that specimens are properly packed for shipping.
- make sure that specimens mailed are in mailing containers.
- use the coded labels. They are used in this Division as an aid to sorting specimens by laboratory sections.
- use your supplies in order of receipt.
- do not over-stock.
- do not discard mailing containers, they are recycled.

Specimen outfits are to be used for the collection and transportation of Public Health Laboratory Specimens only.

OUTFITS FOR CLINICAL SPECIMENS

CODE ON LABEL OF SPECIMEN CONTAINER	CONTAINER USED FOR SPECIMENS FOR THE FOLLOWING TYPES OF TESTS	CODE ON LABEL OF SPECIMEN CONTAINER	CONTAINER USED FOR SPECIMENS FOR THE FOLLOWING TYPES OF TESTS
Enteric Bacteriology		Parasitology	
EB	Bacterial examination of Faeces	PH	Examination of Faeces for intestinal parasites — routine examination (including amoeba) or when other than faeces submitted.
Mycology		PH	Examination of Urine for the eggs of <i>S. hematobium</i> .
KB	Examination for systemic and subcutaneous fungi	PW	Swabs — pinworm
BA	Blood or body fluids for systemic fungi	BA	Blood for Serological Tests of Parasitic Infections
Serology		Tuberculosis	
SS	Blood for Serological Tests for Syphilis Spinal fluid for Serology of Syphilis	KB	Examination of sputum, or body fluids for <i>Mycobacterium</i> species
BA	Blood for other Serological Tests (other than Viral)	KB urine	Examination of urine for <i>Mycobacterium</i> species
DF	Microscopic examination for <i>T. pallidum</i> by Darkfield and/or Direct Fluorescent Antibody (DFA-TP) Test.	KB treated	Examination of stomach washings for <i>Mycobacterium</i> species
General Bacteriology		BA	CSF or small volume body fluids for <i>Mycobacterium</i> species. Mark requisition and mailing label "TB" or "KB"
MS	Swabs for General Bacteriology Pathogens for culture (see General Bact. Section for more details)	KB	Tissue for <i>Mycobacterium</i> species. Please add a few drops of sterile water or saline
MS-Pertussis	Swabs for examination for <i>Bordetella pertussis</i>	Water Bacteriology	
ME	Smears for Microscopic examination	WB (Treated)	Total and/or Faecal Coliform Bacteria testing of drinking, recreational and waste waters
CF	Enzyme immunoassay for Chlamydia trachomatis (female patients)	WB (Treated) ICE	Water Bacteriology examination of ICE.
CM	Enzyme immunoassay for Chlamydia trachomatis (male patients)	Virology Service	
KB	If these containers are used for General Bact. specimens, mark same accordingly.	HI	Blood for Rubella Testing
Food Poisoning		HV	Blood for Hepatitis Testing
Sterile Container	Bacterial examination of remnants of food suspected of food poisoning incidents	VS	Blood for all other Virus Serology
EB	Bacterial examination of faeces suspected in food poisoning incidents	DF	Lesion fluids for Electron Microscopy
		VI	Swabs for Virus Isolation
		AT	Blood for HIV testing

ENTERIC BACTERIOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Faeces	For Enteric Pathogens: Salmonella Shigella Enteropathogenic Escherichia coli (children less than two years of age) Campylobacter Yersinia E. coli O157:H7 Vibrios, Aeromonas and Plesiomonas, species, when requested, if symp- toms, or if travel	EB	One screw-capped plas- tic bottle, containing red buffer preservative, and one wooden spoon, and accompanying Requisition/Report Form Enteric Bacteri- ology HLTH 1825 (Cary-Blair transport medium)	Collect one spoonful of faeces before administering any medication. 1. The stool should be passed into a clean, dry container. 2. Use the wooden spoon to sample diarrheal portions of stool, espec- ially blood, mucus and pus. 3. Place sample into bottle, mixing it well with the preservative. Leave wooden spoon in bottle. Replace the cap tightly. 4. Fill in the required information on the Requisition/Report Form HLTH 1825. Give a brief clinical history and indicate travel abroad. This will enable the laboratory to select the most appropriate procedure for a rapid diagnosis.
Enteric organisms A. Other than Campylobacter	For confirmation, identification and typing	—	—	Organism should be submitted as a slant culture in a leak-proof tube, using Requisition/Report Form HLTH 1825 Enteric Bacteriology. Submit only a pure culture of the organism. For the Enterobacteriaceae, the pre- ferred slant medium is nutrient agar.
B. Campylobacter culture	For confirmation or identification	MS	One vial Amies trans- port medium, one ster- ile swab and Requisi- tion/Report Form HLTH 1825	Inoculate a blood agar plate with the suspect Campylobacter colony and incubate it microaerophilically for 24 hours. Take a heavy inoculum from Blood agar plate with a sterile cotton tipped swab and send this swab in Amies Transport Medium.
Other Specimens: Urine Abscess/wounds Tissue Autopsy specimens	—	—	—	Consult the Enteric Laboratory Telephone (604) 660-6059

FOOD POISONING

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Remnants of food	Culture for food-borne disease bacteria such as Salmonella, Shigella, Staphylococcus aureus, Bacillus cereus & Clostridium perfringens. Yersinia enterocolitica, Vibrio parahaemolyticus, Campylobacter jejuni/coli, Enteropathogenic E. coli, E. coli O157:H7, and Listeria monocytogenes on special request.		1) Sterile container or 2) Original container	— Faeces and vomitus should be collected from patients in food-borne disease outbreaks. — Six ounces (180 grams) of food should be submitted. — Food and clinical specimens should be kept and transported under refrigeration. Food poisoning investigation Form L1882A should accompany the specimens, and L1882B should be sent when information available.
Vomitus	Culture for foodborne disease bacteria		Sterile container	
Faeces	Culture for foodborne disease bacteria	EB	Plastic vial containing preservative; sterile wooden spoon	
Blood	Botulism*	SS	7 ml pink rubber stopper serology tube	Collect 30 ml whole blood or 15 ml serum before administration of antitoxin.
Faeces	Botulism*		Sterile container	At least 3 oz. (90 grams).
Food	Botulism*		Sterile unbreakable leak-proof container	At least 3 oz. (90 grams).
Vomitus or Gastric Contents	Botulism*		Sterile container	At least 3 oz. (90 ml) if possible.
				ALL SPECIMENS SHOULD BE REFRIGERATED, NOT FROZEN, AND BE SHIPPED AS QUICKLY AS POSSIBLE AFTER COLLECTION

* Botulism testing is not a routine procedure and is carried out only after consultation with the medical staff of the Provincial Laboratory.

GENERAL BACTERIOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Swabs from: Cervix, vagina, urethra, rectum, eye, ear, nose, throat, mouth, skin lesions, wounds, other	Culture for Neisseria gonorrhoeae Yeast Corynebacterium diphtheriae Staphylococcus aureus Beta-hemolytic streptococci Other pathogens <i>Note:</i> For female patients submit endo- cervical swabs for culture for <i>N. gonor-</i> <i>rhoeae</i> and vaginal swabs for Yeast	MS	One vial Amies transport medium, one sterile swab, one General Bacteriology Requisition Form HLTH 1814	I. Instructions for use of MS outfit (Instructions also found on reverse side of requisition) 1. Transport medium is marked with expiry date and must be stored in a cool place. 2. After collecting specimen place swab in transport medium and break off swab stick so vial cap can be screwed on tightly. Complete requisition and label on vial. 3. Return to laboratory immediately. If delayed, refrigerate until dispatched and ship to laboratory in cooler. (Use icepacks except in winter months.) II. Collection of genital specimens 1. Endocervical specimens (for exami- nation for <i>N. gonorrhoeae</i>). Use speculum moistened with warm water. Wipe cervix clean to remove vaginal secretions. Collect discharge from endocervix using a swab and a ringing motion to help force exudate from endocervical glands. 2. Vaginal specimens (for examination for other bacteria, yeast). Use speculum. Collect vaginal secre- tions with swab. 3. Male urethral specimens Retract prepuce from glans penis and if necessary wipe the meatus with sterile gauze. Digitally strip "milk" the penile urethra to obtain sufficient exudate. Use swab to collect exudate. If no discharge obtained insert a thin wire swab approximately 2 cm into the urethra and rotate gently. 4. Anal specimens Insert swab approximately one inch into the anal canal. If swab is stained with faeces use another swab to obtain specimen. Move swab from side to side in anal canal to sample crypts; allow several seconds for absorption of organisms to the swab.

GENERAL BACTERIOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Smears from: Cervix, vagina, urethra, conjunctiva	Microscopic examination for <i>Neisseria gonorrhoeae</i> , <i>Trichomonas vaginalis</i> , yeast, bacterial vaginosis <i>Note:</i> For female patients submit endocervical smears for examination for <i>N. gonorrhoeae</i> and vaginal smears for examination for <i>Trichomonas</i> , yeast and bacterial vaginosis	ME	One cardboard slide mailer with two slides. One Microscopic Examination Requisition Form HLTH 1840	1. Instructions for use of ME outfit (Instructions also on requisition) 1. If both <i>Trichomonas</i> and bacterial vaginosis are requested submit two vaginal smears. 2. Use glass slides with frosted ends. Do not put material from 2 sources (e.g. cervix and vagina) on same slide. Mark specimen source on slide. 3. Collect material on swab as for culture and by gently rolling swab in one direction place 2 non-overlapping rolls side by side in the middle of slide. Mark specimen source on slide. 4. Allow slides to air dry. Do not heat or place moist slides together.
	Enzyme immunoassay for <i>Chlamydia trachomatis</i> (female patients) Enzyme immunoassay for <i>Chlamydia trachomatis</i> (male patients)	CF CM	Collection kit with one transport tube and two large-tipped cotton swabs with plastic shafts, one General Bacteriology Requisition Form HLTH 1814 Collection kit with one transport tube and one small-tipped cotton swab with wire shaft, one General Bacteriology Requisition Form HLTH 1814	1. Instructions for use of CM and CF outfit 1. Take specimens according to instructions on the envelope of the collection kit.

GENERAL BACTERIOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Pernasal and postnasal swabs <i>Note:</i> Pernasal swabs are the specimens of choice for examination for <i>B. pertussis</i> . If postnasal swabs are collected they should be in addition to pernasal swabs.	Direct fluorescent antibody test and culture for <i>Bordetella pertussis</i>	MS-Pertussis	Two vials Amies transport medium, two wire dacroswabs, two sterile slides for smears for fluorescent antibody studies, one General Bacteriology Requisition Form HLTH 1814, one set instructions	1. Instructions for use of MS-Pertussis outfit (Detailed instructions also enclosed in outfit) 1. Transport medium is marked with expiry date and must be stored in a cool place. 2. Label vials of transport medium and frosted end of slides "pernasal" or "postnasal." 3. Support child's head firmly and collect pernasal swab by pushing swab gently through the nostrils and over and into the nasopharynx. Rotate swab to pick up mucus material. Take postnasal or throat swab by rubbing swab firmly against the posterior wall of the pharynx. 4. Rotate swabs over the entire area of the two etched circles on the slide. Air dry smear and return to original wrapper. 5. Insert swab into transport medium, cut wire, replace cap tightly. 6. Return to lab immediately. If delayed, refrigerate until dispatched and ship to laboratory in cooler. (Use icepacks except in winter months.)
Sputum, aspirates, washings, tissue, body fluids	Culture for <i>Legionella</i> <i>Franciscella</i> <i>Brucella</i> Other	KB ¹	One sterile screw-cap jar. Use General Bacteriology report form HLTH 1814. Correct outside label to SB.	1. If specimens will not reach the laboratory immediately refrigerate and ship specimens to laboratory in cooler with ice. 2. When submitting specimens for <i>Franciscella</i> (tularemia) please contact laboratory in advance so that necessary culture media can be prepared.
Blood cultures	Culture for <i>Brucella</i>	No outfit supplied	—	—
Other	Other bacterial pathogens cultured on request	Swabs — MS ¹ Other — KB ¹	See above	1. Contact laboratory for information
Cultures for identification	Identification of aerobic and anaerobic bacteria except mycobacteria and enteric pathogens	MS ²	See above	1. Submit only pure cultures. 2. Indicate suspected identity and/or preferred growth conditions. 1. Other sterile leak-proof containers also suitable. If KB outfits are used for General Bacteriology specimens, please ensure outside of outfit is labelled "Attention: General Bacteriology." 2. Appropriate culture medium in leak-proof tubes also suitable.

MYCOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Skin scrapings, Hair, Nails	Superficial fungi	MY	Envelope	Lower Mainland: Available only through private laboratories. Outside Lower Mainland: Available through Provincial Laboratory.
Sputum	Systemic and opportunistic fungi	KB sputum	Sterile screw-capped jar Use Mycology requisition	3 fresh specimens on consecutive days
Body Fluids	Systemic and opportunistic fungi	KB or BA	Sterile screw-capped jar Use Mycology requisition Sterile stoppered tube Use Mycology requisition	Do not use BA Requisition
CSF	Systemic fungi	BA	Sterile stoppered tube Use Mycology requisition	Do not use BA requisition
Biopsy Material	Systemic and sub-cutaneous fungi	KB	Sterile screw-capped jar Use Mycology requisition	Keep moist with sterile saline
Faeces	Candidiasis	KB	Sterile screw-capped jar Use Mycology requisition	No preservatives
Swabs	Systemic and sub-cutaneous fungi	—	Use Mycology Requisition 1815	Clear transport medium
Blood	Systemic fungi	—	Please consult the Provincial Laboratory for method of submission	Cultures done routinely on AIDS or ARC patients. Test may be done on other immuno compromised patients following consultation.
Cultures for Identification (Labs only)	Pure sub-culture	—	—	Indicate source of specimen. Send culture on Sabouraud's dextrose medium in screw-capped vial. Do not submit as swab or pick of culture in transport medium.
			USE REQUISITION HLTH 1815 WITH ABOVE OUTFITS CORRECT OUTSIDE LABEL TO MY	

Patient's history is essential for ALL specimens submitted for mycological examination.

PARASITOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Faeces	For intestinal parasites; routine examination (including amoeba)	PH	Screw-capped plastic bottle 1/3 filled with SAF* fixative (*Sodium-acetate acetic-acid & formaldehyde)	1. Laxatives, antidiarrhoeal drugs or antibiotics should not be taken for five or more days before a sample is collected. At least ten days should elapse after completing treatment of a parasitic infection before repeat samples are collected. 2. If a protozoan infection is suspected, several repeat samples, collected at intervals of 2 or 3 days, are advised. 3. Collect faeces in a clean, dry receptacle. 4. Do not contaminate specimen with urine, water or soil. <i>Note:</i> The fluid (fixative) should not be discarded prior to collecting, nor mixed with the entire bowel movement before placing it in the sample bottle. — With the aid of wooden spoon, add 2 or 3 spoonful of fresh specimen to the liquid in the bottle. — Mix well and screw lid on tightly. Ensure that the requisition has been completed. Send to the Parasitology Laboratory. — Give brief clinical history, this will enable the laboratory to determine which of the various techniques available will provide the most reliable diagnosis. 5. Replace cap securely and send to Parasitology Laboratory. Ensure that the requisition has been completed, and bottles are identified with patient's and doctor's names.
Urine	Schistosomiasis	PH	Screw-capped plastic bottle	Fill bottle three-quarters full with freshly voided specimen. If available, fill remainder of bottle with SAF. The optimal urine specimen to reveal eggs of <i>S. haematobium</i> has been shown to be the one passed between 11 a.m. and 2 p.m. Eggs are more frequently present in the last few drops of the specimen than the first portion voided. Since the passage of schistosome eggs fluctuates, repeat specimens are recommended. <i>Note:</i> If specimen is submitted in SAF, the viability of eggs can not be determined.

PARASITOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Tapeworm segments, other worms	—	PH	Screw-capped plastic bottle	If at all possible, submit specimen(s) alive (unpreserved) in physiological saline (0.85% NaCl). If great delay (3+ days) is anticipated, submit specimen in 10% formalin, or in SAF* fixative in PH container.
Arthropods (mites, ticks, fleas, lice, fly maggots)	—	PH	Screw-capped plastic bottle	Submit specimen for identification in 70% alcohol or "dry." Indicate source of specimen and pro- vide relevant data.
Pinworm eggs (<i>Enterobius vermicularis</i>)	Enterobiasis	PW	Paraffin-vaseline swab in glass tube Faeces not suitable	Pinworm ova are deposited on the skin about the anal opening. Several swabs should be taken before pinworm infec- tion can be excluded. If one member of the family is infected, swabs should be taken from everyone in the household. Do not wipe or wash anal area area before swabbing. 1. Do not remove applicator from rubber stopper. 2. FIRST thing in morning collect the specimen by swabbing lightly over skin surface surrounding the anus and then inserting about ¼ inch into the anal canal. 3. Return applicator to glass tube.
Blood films, thin and thick	For malaria and other blood parasites	—	—	Submit thick and thin blood films. Blood films should be made at height of febrile paroxysm and 8 to 16 hours after an attack. Use of anticoagulated venous blood for blood smears is not advised because the anticoagulant may interfere with the staining of malarial parasites. Preparation of thin blood films: 1. Treat finger-tip with alcohol and wipe dry with gauze. 2. Puncture skin with a sterile stylet and wipe away first drop of blood with gauze. 3. Touch a slide near one end to the blood so that a small drop adheres. 4. Holding the second slide at about 30° from the horizontal, lower it onto the first in front of the blood drop. 5. Pull second slide back until blood flows into the angle between the two slides. 6. Then push the second slide to the opposite end of the first.

PARASITOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
				7. Air-dry the resulting film. If properly prepared, the film will taper to an end about half way along the slide. If the drop of blood was too large, the film extends the entire length of the slide and is unsatisfactory. Preparation of thick blood films: 1. Place about 3-4 average sized drops of blood close together near one end of the second slide. 2. Mix gently with corner of the first slide, covering an area about a dime in size. Newsprint should be barely readable through the centre of the film. 3. Air-dry thoroughly for several hours in a horizontal and dust-free position before placing in container.
Blood in anticoagulant	For microfilariae	—	—	Submit blood in: Vacuum tube, lavender coloured rubber stopper, with EDTA; 1. Obtain about 5 ml or more of venous blood around midnight and another sample around noon. 2. Place samples in separate sterile tubes containing anticoagulant. 3. Stopper and invert tubes several times. Submit as soon as possible. 4. Lymph fluid aspirated from lymph ducts in the groin area and handled as described above may occasionally be helpful.
Blood, clotted or separated serum	For serology of parasitic infections.	BA	7 ml vacutainer tube, pink stopper with Serological Test form (other than Viral) HLTH 1804.	Include a brief history with relevant travel history, parasitology and clinical findings results of relevant tests already performed.
	See Serology Section			See Serology Section
Other specimen types (e.g. biopsy, autopsy, etc.)	—	—	—	Consult the Parasitology Laboratory, Telephone (604) 660-6055 or 660-6005/6004

SEROLOGY (Non-Viral)

The Laboratory, conducts serological tests with single or groups of antigens, as appropriate, for syphilis and microbial infections.

Samples of clotted blood in vacutainers are accepted for testing.

REQUIREMENTS: Completed Requisition/Report Form HLTH 1804 with *adequate history and clinical findings* must accompany requests. Specimens must be adequately identified (*tubes with no name will be discarded*). Form HLTH 1867 for Syphilis.

RECOMMENDATIONS: Full tube (7 ml) whole clotted blood at onset (acute) and after 10-14 days (convalescent).

Experience has shown that serological determinations can be performed on specimens sent through the mails, if the samples are correctly taken, sent in suitable containers, and are not delayed or adversely affected by temperature in transit. However, it is always preferable to deliver specimens to the laboratory or nearest "pick-up" point.

The Laboratory is prepared to send samples for serological tests that it does not perform to appropriate reference laboratories.

COLLECTION OF BLOOD FOR SEROLOGICAL TESTS

Because of the importance of submitting suitable specimens of blood or separated serum, attention is called to the following procedures found to be satisfactory for collection of blood for serological tests.

Equipment must be dry, clean and sterile. Blood should not be withdrawn within one hour after a meal to avoid a chylous specimen. The use of vacuum tubes rather than syringes is preferred.

A. Use of Vacutainer for Blood Sample Collection:

1. Select suitable vein, and wipe skin with an alcohol swab. The alcohol must be allowed to dry before venipuncture.
2. Collect blood with a vacuum tube outfit, consisting of vacuum tube, outer plastic holder, with needle attachment to be fixed to the nozzle of the holder. Needle attachments are single or multiple, the latter allowing the filling of more than one tube without withdrawal of needle from the vein.
3. Leave the tube at room temperature for about an hour or until clotting is complete.
4. The tube should then be stored in a refrigerator or cold room (never a deep-freeze) until dispatched to the laboratory. Alternatively, serum is separated and dispatched.

B. Use of Syringe and Needle

Sterile disposable syringes and needles, recommended.

1. Withdraw blood, detach the needle from the syringe and gently discharge blood into a dry 7 ml vacuum tube. Do not discharge blood by "stabbing" the needle through the stopper of a vacuum tube. The in-rush of blood from the syringe will lead to haemolysis.
2. The tube should then be firmly stoppered. Do not use a cotton plug.
3. Leave the tube at room temperature, for about an hour or until clotting is complete.
4. The tube of clotted blood should then be stored in a refrigerator or cold room (never a deep-freeze) until dispatched to the laboratory. Alternatively, serum is separated and dispatched (see "C" below).

C. Separation of Serum from Clotted Blood

1. Withdraw blood preferably by a vacuum tube outfit, and allow clotting to occur at room temperature.
2. After clotting has occurred, centrifuge the tube and transfer the clean supernatant serum, USING A TRANSFER PIPETTE OR BULB (NEVER PIPETTE BY MOUTH) to a vacuum tube outfit.
3. The tube of separated serum should then be stored in a refrigerator or cold room until dispatched to the laboratory.

SEROLOGY (Non-Viral)

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Blood, clotted	Serology of Syphilis 1. Screening Test for Syphilis: (VDRL Carbon, RST, RPR, etc.). Reported as RPR (Rapid Plasma Reagin Test) 2. Confirmatory Tests: Micro-hemagglutination-Treponema pallidum (MHA-TP) 3. Fluorescent Treponemal Antibody Absorption (FTA-ABS) on special request after consultation with Division of STD Control	SS	7 ml vacutainer with Syphilis Serology Form HLTH 1867	Complete requisition, 1. Withdraw venous blood 2. Allow blood to clot in tube, standing upright at room temperature, for about an hour. (See reverse side of the requisition form for more instructions)
Chancre fluid	Darkfield examination for <i>T. pallidum</i> (DF) and/or Direct Fluorescent Antibody Test of Smear (DFA-TP)	DF	Vial of capillary tubes, Vial of wax, sterile slide with etched circles Requisition/Report Form for Treponema pallidum Microscope Examination Form L6	Exudate free of blood collected from primary chancre or from secondary mucous or cutaneous lesion in outfit (code DF). After collecting, seal both ends of capillary tube with wax provided. Use "special" slide in outfit (code DF) only.
Blood, clotted	Serological Tests (OTHER THAN VIRAL) 1. Antistreptolysin "O" Titre (ASOT) for Rheumatic fever, glomerulonephritis 2. Brucella (BR) for Brucellosis (undulant fever) 3. Tularemia 4. Weil-Felix (WF) for Rickettsial infections 5. Toxoplasmosis Indirect Fluorescent Antibody (IFA) for IgG & IgM; Toxoplasmosis Enzyme Linked Immunosorbent Assay (ELISA) for IgG & IgM.	BA	7 ml vacutainer with Serological Test Form HLTH 1804	Complete requisition Draw blood as above

SEROLOGY (Non-Viral)

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Spinal fluid	6. Amoebiasis — Immuno Diffusion (I.D.) & ELISA.	SS	7 ml vacutainer	Acute blood must be drawn within 7 days of the onset of symptoms and convalescent at least 21 days later. Refer test to LCDC.
	7. Cryptococcosis — Latex Agglutination (L.A.).			
Blood, clotted	8. Borrelia Indirect Fluorescent Antibody (IFA) Test.	BA	Vacutainer with Syphilis Serology Form HLTH 1867	Complete requisition Submit 1-2 ml fluid in sterile vacutainer.
	9. Echinococcus — 5 Arc Double Diffusion Gel Test.			
	Serological test for Syphilis (VDRL)			
	Serological tests referred to other Laboratories			
	Amoebiasis			
	Blastomycosis			
	Coccidioidomycosis			
	Cryptococcosis			
	Cysticercosis			
	Diphtheria			
	Echinococcosis			
	Filariasis			
	Gonorrhoea			
	Histoplasmosis			
	Leishmaniasis			
	Leptospirosis			
	Listeriosis			
	Malaria			
	Pertussis			
	Schistosomiasis			
	Tetanus			
	Toxocariasis			
	Trichinosis			
	Trypanosomiasis			
	Yersiniosis			

TUBERCULOSIS BACTERIOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Sputum	Tuberculosis bacteriology, Mycobacteriology	KB sputum	Sterile screw-capped jar	3 specimens on consecutive days
Urine	Tuberculosis bacteriology, Mycobacteriology	KB urine	Sterile screw-capped jar	3 first morning specimens on consecutive days NOT 24 hour specimens
Body Fluids	Tuberculosis bacteriology, Mycobacteriology	KB or BA	Sterile screw-capped jar	Add anti-coagulant
			Sterile stoppered tube	Attach TB Requisition HLTH 1869
Stomach Washing	Tuberculosis bacteriology, Mycobacteriology	KB Treated	Sterile screw-capped jar with disodium phosphate	3 fasting specimens not larger than 100 ml on consecutive days
CSF	Tuberculosis bacteriology, Mycobacteriology	BA	Sterile stoppered tube	Attach TB Requisition HLTH 1869
Swabs	Tuberculosis bacteriology, Mycobacteriology	—	—	Swab outfit with clear transport media best. Do not use charcoal medium.
Biopsy Material	Tuberculosis bacteriology, Mycobacteriology	KB	Sterile screw-capped jar	Keep moist (by addition of few drops sterile distilled water, or by placing tissue on top of solid transport medium).
		BA	Sterile stoppered tube	Attach TB Requisition HLTH 1869
Blood	Only for <i>M.intracellulare-avium</i> in AIDS or other immuno-compromised patients	—	Please consult the Provincial Laboratory for method of submission	Culture for <i>M.intra-avium</i> done routinely on AIDS or ARC patients. Test may be done on other immuno-compromised patients following consultation.

VIROLOGY SPECIMEN COLLECTION

It is important to remember these facts:

- one virus can cause different clinical syndromes.
- one clinical syndrome can be caused by different viruses.
- it is important to send specimens for viral isolation in the acute phase, as well as paired sera, acute and convalescent, taken 1-2 weeks apart.
- essential clinical information must be submitted on the laboratory request form, including age, date of onset, clinical signs and diagnosis.

SPECIMENS TO BE COLLECTED

Acute Infections

Type of Infection	Swab of Throat or Nasopharynx	Rectal Swab or Stool	CSF	Brain Biopsy	Urine	Vesicle Skin Scrapings	Swab or Scrapings of Conjunctiva /Cornea	Cervix, Vagina, Urethra	Acute and Convalescent Sera
Respiratory	X	(X)							X
Meningitis	X	X	X						X
Encephalitis	X	X	X	X					X
Exanthema, Maculopapular	X	X							X
Exanthema, Vesicular									
— Herpes varicella						X			
— Enteroviruses	X	X				X			
Gastroenteritis		X							
Mumps	X		(X)		X				X
Conjunctival/Corneal	X						X		X
Genital-urethral						X		X	
Mononucleosis					X*				X**
P.U.O.	X				X				X
Hepatitis									X

* if CMV is suspected

** a single blood specimen is sufficient for Epstein-Barr virus serology.

() depending on clinical signs

Autopsy — send specimens according to site of lesions and clinical disease.

Congenital and Neonatal Infections

TORCH Serology — submit blood sample from **both** mother and infant (avoid using cord blood, if possible).

	Naso-pharynx	Rectal Swab	CSF	Urine	Vesicle Fluid	Conjunctiva	Cervix	Serum
RUBELLA Baby Mother	X(x3)**	X(x3)**	X	X(x3)**				X X
C M V Baby Mother				X(x3)** X			X	X X
HERPES Baby Mother	X	X			X X	X	X	X X

In case of abortion or still-birth, send tissue specimens for virus isolation.

** collect on days 1, 3 & 5 post-partum

INTERPRETATION OF VIROLOGY REPORTS

RUBELLA SEROLOGY

Rubella antibodies will usually reach a maximum titre in five to six days after appearance of rash. Collect first (acute) specimen immediately patient presents with rash, or has contact with a person with rash. For paired sera, the ratio of the test results (convalescent/acute) is calculated. A RATIO OF 1.65 OR GREATER INDICATES A RECENT RUBELLA INFECTION or seroconversion as a result of vaccination. If the value for the acute sample is less than 1.00, a third specimen should be collected. Alternatively, the convalescent specimen may be tested for rubella-specific IgM.

Interpretation of rubella status tests:

1.00 or greater — rubella IgG antibodies present

Less than 1.00 — rubella IgG antibodies NOT present at a significant level.

VIRUS SEROLOGY

Serology results are expressed as reciprocals of the titre. A four-fold or greater rise in antibody titre in the convalescent serum is considered diagnostic of recent infection.

For some viruses, results for virus specific IgM and IgG will be reported. These results are not expressed as titres, but are reported as "reactive (+)" or "non-reactive (-)." The presence of virus-specific IgM is compatible with a recent infection by that virus. The presence of virus-specific IgG in the absence of IgM indicates a past exposure to the virus.

EPSTEIN-BARR VIRUS SEROLOGY

Enzyme immuno assays for three EBV markers are performed at the Provincial Laboratories:

- 1) VCA (virus capsid antigen) — IgG
- 2) VCA — IgM
- 3) EBNA (nuclear antigen) — IgG

In general, acute primary EBV infections are characterized by the following test results:

VCA - IgG +
VCA - IgM + or -
EBNA - IgG -

Infections in the remote past or following clinical recovery are characterized as follows:

VCA - IgG +
VCA - IgM -
EBNA - IgG +

Absence of VCA - IgG and EBNA - IgG antibodies indicates that the patient has not been infected by EBV.

In most cases, a diagnosis of EBV infections can be made with a single serum specimen. If a follow-up or convalescent specimen is required, we will request that one be sent.

HEPATITIS SEROLOGY

Hepatitis A

Presence of Hepatitis A virus-specific IgM indicates a recent hepatitis A infection.

Hepatitis B

+ = reactive

- = non-reactive

HB _s Ag	Anti-HB _c (total)	Marker		HB _e Ag	Anti-HB _e	Interpretation
		Anti-HB _c IgM	Anti-HB _s			
+	+	+	-			Acute hepatitis B infection
-	+	+	-			Recent acute hepatitis B infection (convalescent "window" phase)
+	+	-	-	+	-	Chronic carrier state, highly-infectious
+	+	-	-	-	-	Chronic carrier state, infectivity low
+	+	-	-	-	+	Chronic carrier state, infectivity low, possible resolution
-	+		+			Past hepatitis B=immune
-	+		-			Remote past hepatitis B, — possibly immune* — possibly "silent" carrier

* If patient is a candidate for vaccine, it is recommended that vaccine should be offered to those patients who demonstrate this test profile.

Notes:

- 1) Persistence of HB_sAg for more than 10 weeks after an acute episode suggests development of the chronic carrier state.
- 2) In the carrier state, conversion of HB_eAg + to Anti-HB_e +, indicates reduced infectivity and possible resolution.
- 3) Conversion from HB_sAg + to Anti-HB_s +, indicates clinical recovery and immunity.

Hepatitis Non-A-Non-B

Diagnosis of this disease is made by exclusion of infection by hepatitis A, hepatitis B, CMV and EBV.

No tests specific for non-A, non-B hepatitis are available.

HIV (HTLV III) SEROLOGY

- 1) Reactive ELISA screen test results must be confirmed by another procedure (immunofluorescence and/or Western blot).
- 2) Reactive tests for anti-HIV indicate only current or previous infection with the virus. It should be emphasized that this is **not** a test for AIDS.

VIROLOGY SERVICES

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS ALL SPECIMENS MUST BE IDENTIFIED WITH THE PATIENT'S NAME AND SPECIMEN TYPE UNIDENTIFIED SPECIMENS WILL NOT BE TESTED
		CODE ON LABEL (IF KIT AVAILABLE)	OUTFITS	
Blood, clotted or separated serum (not plasma)	(A) For Rubella Testing	HI	Vacuum tube with pink stopper Tube plus Rubella Requisition	1. Withdraw venous blood preferably not immediately following a meal. 2. Allow blood to clot in tube, standing upright at room temperature for about one hour. (a) Ensure that instructions on the back of the requisition are followed. (b) Ensure that adequate clinical details are given and indicate which markers are to be tested for. (c) (i) Submit <i>TWO</i> specimens, the first (acute) as early after onset as possible (not later than 4 days). The second (convalescent) about 7 to 14 days later to detect rise in antibody titre. SINGLE ACUTE PHASE BLOODS WILL NOT BE TESTED (ii) For HIV, Epstein Barr Virus and Hepatitis testing, only one specimen is required. (iii) Tests done will depend on clinical details given on requisition.
	(B) For Hepatitis Testing	HV	Tube plus Hepatitis Requisition	
	(C) For Epstein Barr Virus Testing	VS	Tube plus monospot result plus Virus Serol- ogy Requisition	
	(D) HIV (AIDS)	AT	Tube, plus HIV Requisition	
	(E) All other Virus Serology	VS	Tube, plus Virus Serol- ogy Requisition	
Cerebrospinal Fluid (CSF)			Tube, screw cap or vacuum tube	Collect CSF aseptically, free of red blood cells if possible, and close tube tightly. Use appropriate requisition i.e. Virus Serology or Virus Isolation.
Throat Swabs		VI	Virocult swab plus Virus Isolation Requisition	Swab back of throat near tonsils (for younger children, nasopharynx and throat). Insert swab in plastic sleeve, close tightly and squeeze pledget at bottom to wet swab.
Auger Suction	—	—	Sterile screw cap jar, vacutainer tube or screw cap test tube	Place fluid in test tube or jar. Close tightly. Use Virus Isolation Requisition.
Tracheal-Bronchial Secretions	—	—	Sterile screw cap Test tube or vacutainer tube	Place 2-4 ml of secretions in sterile test tube, close tightly. (Do not use swab.) Use Virus Isolation Requisition.
Sputum	—	—	Sterile wide mouth screw cap jar	Place sputum in sterile jar. Close tightly. Use Virus Isolation Requisition.

VIROLOGY SERVICES

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS ALL SPECIMENS MUST BE IDENTIFIED WITH THE PATIENT'S NAME AND SPECIMEN TYPE UNIDENTIFIED SPECIMENS WILL NOT BE TESTED
		CODE ON LABEL (IF KIT AVAILABLE)	OUTFITS	
Faeces	For detection of gastroenteritis viruses by physical and chemical methods	—	Sterile wide mouth screw cap jar (DO NOT USE TEST TUBES!)	Place sample in jar. Close tightly. Do not add any preservatives or other fluids. Virus Isolation Requisition. Refrigerate and forward to Provincial Lab as soon as possible.
Rectal Swab	—	VI	Virocult swab plus Virus Isolation Requisition	Insert swab in plastic sleeve. Close tightly and squeeze pledget at bottom to wet swab. Refrigerate. Swab must contain some faecal material.
Urine	—	—	Sterile vacutainer tube or screw cap tube	Place about 10 ml of urine in tube and close tightly. For CMV isolation submit a midstream sample of morning urine which must reach the Laboratory as soon as possible after collection.
Lesion fluids	For Electron Microscopy	DF	Vial, corked with four capillary tubes, soft paraffin to seal tubes. (If no capillary tube available, use fine needle syringe. Tape plunger and cover needle.) Glass slide (if syringe or capillary tubes not available).	Open the vesicle by pricking near base with a needle. Apply one end of capillary tube to the bead of vesicle fluid; it will be drawn up by capillary action. Stab this end into paraffin then seal other end. OR Open the vesicle, apply the clean microscope slide to it to collect the fluid, air dry DO NOT FIX, cover the dry slide with a clean one and send in a slide mailer. Use Virus Isolation Requisition. Be sure patient's name is on slide.

VIROLOGY SERVICES

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS ALL SPECIMENS MUST BE IDENTIFIED WITH THE PATIENT'S NAME AND SPECIMEN TYPE UNIDENTIFIED SPECIMENS WILL NOT BE TESTED
		CODE ON LABEL (IF KIT AVAILABLE)	OUTFITS	
Scrapings from Genital lesions Eye lesions Mouth lesions Skin lesions Other ulcerative lesions	—	—	Virocult swab or slide, Virus Isolation Requisition	Gently scrape the base of one or more early lesions, using a scalpel blade held at right angle to the skin. Spread the cells thus obtained thinly on a glass slide. Air dry. DO NOT FIX . Label with patient's name and send to lab in a slide mailer.
Swabs from Genital lesions Eye lesions Mouth lesions Skin lesions Other ulcerative lesions	—	VI	Virocult swabs, Virus Isolation Requisition	Swab the base of a fresh lesion applying enough force to remove cells. Insert in plastic sleeve, close tightly and squeeze pledget at bottom to wet swab.
Body fluids (Pericardial, Joint, Pleural, etc.)	—	—	Sterile test tube or vacutainer tube	Place fluid in container and close tightly. Virus Isolation Requisition.
Biopsy or Autopsy Tissues Abortion Material Products of Conception	—	—	Sterile screw cap jar (DO NOT USE TEST TUBES) Virus Isolation Requisition	DO NOT FIX . Send each tissue in a separate jar and identify with patient's name and type of specimen. DO NOT ADD ANY FLUID . Refrigerate. Forward to Laboratory without delay.

For best results, collect specimens properly, as soon as possible after onset of symptoms and transport quickly to the Virus Laboratory. Include a brief clinical history. Ensure Doctor's name and telephone number are on the requisition. Supply one requisition for each specimen. Indicate if patient is pregnant.

WATER BACTERIOLOGY

SPECIMENS	TESTS	SPECIMEN CONTAINERS RECOMMENDED		INSTRUCTIONS
		CODE ON LABEL	OUTFITS	
Drinking Water from private citizens	Total coliform bacteria	*Public Analysis Kit	Three plastic bottles: One 250 ml screw-capped, sterile, with Requisition/Report Form HLTH 1805, and two for chemical analyses	* Available for a fee at: Environmental Laboratory, 3650 Wesbrook Crescent Vancouver, B.C. V6S 2L2 Tel: 660-1685 Sample and return to Environmental Laboratory as soon as possible, refrigerate but do not freeze.
Water from Official Health and Environmental Agencies				
a) Drinking: Community Water System (Com.W.S.) serving 100 or more persons	Total coliform and faecal coliform bacteria	WB Treated	One sterile plastic bottle, screw-capped, containing sodium thiosulphate with Requisition/Report Form HLTH 1805	Submit samples as soon after collection as possible, refrigerate but do not freeze. Further instructions on reverse side of Requisition/Report Form HLTH 1805
b) Drinking: serving less than 100 persons	Total coliform bacteria (and Faecal coliform bacteria on request)	WB Treated	As above	As above
c) Ice	Total coliform bacteria	WB Treated ICE	One sterile glass bottle, wide-mouth, screw-capped, containing sodium thiosulphate, with Requisition/Report Form HLTH 1805.	As above.
d) Pools	Total coliform bacteria **Standard Plate Count (SPC)	WB Treated	As above.	As above **SPC on request and only if received within 4 hours of collection
e) Bathing Beaches	Faecal coliform bacteria	WB Treated	As above	As above
f) Other Waters*** (i) Surface water (pond, lake, stream, spring, river, reservoir) (ii) Industrial waste water and sewage	Total coliform and/or Faecal coliform bacteria	WB Treated	As above	As above ***Indicate three dilutions and tests required on Requisition/Report Form HLTH 1805 in boxes by check mark (✓)
Water from other Government Agencies				
a) Drinking	Total coliform (and Faecal coliform bacteria on request) **Standard Plate Count (SPC)	WB Treated	As above	As above **SPC on request and only if received within 4 hours of collection.
b) Ice	Total coliform bacteria	WB Treated ICE	As above	As above

Appendix

Diseases and Syndromes Caused by Infectious Agents

Laboratory Diagnosis

Arranged Alphabetically by Disease or Syndrome

Introduction

This Appendix lists alphabetically the various diseases and syndromes caused by infectious agents, together with the names of the agents, specimens to be submitted to the laboratory, a brief description of the nature of the tests conducted in the laboratory and brief comments where appropriate.

The list of diseases and syndromes is extensive, and includes several that do not commonly occur in Canada. However, these infections may be contracted on foreign visits by businessmen, missionaries, servicemen, foreign service employees, students and staff members of British Columbia universities, hospitals and other health care institutions.

Where exotic, dangerous diseases are suspected in travellers (Haemorrhagic fever, Ebola, Lassa, Marburg, etc.) contact the Medical Officer of Health immediately, before taking any specimens.

The increasing number of immigrants from countries where tropical diseases are common is also increasing the volume of specimens to be examined for parasites. In many a physician's office, the nurse or secretary plays an important role in submitting specimens, and the Appendix has been prepared accordingly.

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Abcess , caused by parasites (See Amoebic dysentery; Amoebic encephalitis; Filariasis)				
Acanthamoeba keratitis	<i>Acanthamoeba</i> species	Corneal biopsy or scrapings	Culture	Please phone beforehand to obtain special transport medium 660-6005/6004 or 660-6055.
Actinomycosis	<i>Actinomyces israelii</i> , <i>Actinomyces</i> species	Sputum Pus	Microscopic examination and culture	
Acute benign lymphoblastosis (See Mononucleosis, infectious)				
Acute laryngo-tracheobronchitis (See Laryngitis)				
Acute respiratory disease syndrome (See Adenovirus infections)				
Adenovirus Infections , including infections of conjunctiva; upper respiratory tract; pneumonia; acute respiratory disease syndrome (ARD); epidemic kerato-conjunctivitis (EKC); pharyngo-conjunctival fever (PC fever)	Adenoviruses (over 30 distinct antigenic types)	Throat swab	Virus isolation	
		Conjunctival swab		
		Sputum		
		Faeces		
		Autopsy material (lung)		
		Blood, clotted, or serum (acute and convalescent)	Virus serology	
African sleeping sickness (See Trypanosomiasis, African)	Trypanosoma gambiense/rhodesiense			
AIDS	HTLV III LAV HIV	Blood, clotted or serum	HIV Serology	1. Use HIV Requisition. 2. Must include patient name or initials, birthdate, risk factors and symptoms, and physician's name.
Alastrim (See Poxvirus infections)				
Amoebiasis Amoebic dysentery, amoebic liver abscess	<i>Entamoeba histolytica</i>	Faeces, preserved	Microscopic examination for trophozoites and cysts in Parasitology	Worldwide distribution. The following intestinal protozoa are considered non-pathogenic but, because they indicate that the patient may have been exposed to <i>E. histolytica</i> , are routinely reported: <i>Entamoeba coli</i> ; <i>E. hartmanni</i> ; <i>Endolimax nana</i> ; <i>Iodamoeba butschlii</i> ; <i>Chilomastix mesnili</i> . Several samples, collected at 2-3 day intervals should be submitted.
		Aspirated material from abscess		
		Sputum		
		Scrapings from ulcerated bowel (sigmoidoscopic)		
		Autopsy material, preserved		
		Blood, clotted or serum	Serology	
Amoebic encephalitis (See Amoebiasis, also see PAME)				
Ancylostomiasis (See Hookworm disease)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Angiostrongyliasis	<i>Angiostrongylus cantonensis</i>	Cerebrospinal fluid Autopsy material	Microscopic examination Histological examination for worms	Occurs in the Pacific area.
Anthrax	<i>Bacillus anthracis</i>	Swab from skin lesion. Sputum Faeces Blood for blood culture.	Microscopic examination, culture and animal inoculation Culture Blood culture	Primarily an infection of animals. Occurs in man in cutaneous, inhalation, and gastro-intestinal forms.
Arbovirus infections, including fevers; haemorrhagic fevers; hepatitis; meningitis; encephalitis	Arboviruses (over 250 viruses arranged in several groups)	Throat swab Blood, clotted Cerebrospinal fluid Autopsy material (liver, brain, cord) Blood, clotted or serum (acute and convalescent)	Virus isolation Virus serology	Spread by mosquitoes, ticks, and sandflies. Almost all are zoonotic infections. Those most likely to be encountered in Canada are western equine, Venezuelan equine, St. Louis or California encephalitis; Powassan infection. See also leptospirosis.
Ascariasis	<i>Ascaris lumbricoides</i> the large roundworm of man	Faeces Worm passed in faeces	Microscopic examination for eggs Identification of worm	
Aseptic meningitis (See Meningitis, viral)				
Aspergillosis	<i>Aspergillus fumigatus</i> , <i>Aspergillus</i> species	Sputum Blood, clotted or serum	Microscopic examination and culture Serology	Lungs involved most frequently; occasionally other parts of body. Specimens referred to another laboratory
Athlete's foot (See Dermatophytosis)				
Atypical mycobacteria (See Tuberculosis)				
Atypical pneumonia (See Mycoplasmal infections; also pneumonia)				
Bacillary dysentery (See Diarrhoea, bacterial)				
Bacteraemia (See Septicaemia)				
Bartonellosis	<i>Bartonella Bacilliformis</i>	Blood film Skin swab Blood for culture	Microscopic examination Microscopic examination and culture Blood culture	Initial febrile stage of Oroya fever is followed by eruptive stage of Verruga peruana. Occurs in Peru, Ecuador and Columbia. Spread by sandflies.
Basophilic agents or viruses (See Chlamydial infections)				
Beef tape-worm disease (See Taeniasis)				
Bejel (non-venereal syphilis)	Organism closely related to <i>Treponema pallidum</i>	As described under Syphilis	As described under Syphilis	Present in localized areas in Africa, Middle East and Asia.
Benign inoculation lympho-reticulosis (See Cat-scratch fever)				
Bilharziasis (See Schistosomiasis)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Birth defects, caused by viruses (TORCH) (See Rubella, congenital Rubella syndrome, cytomegalovirus infections; herpes; also see toxoplasmosis)				
Blastocystosis	<i>Blastocystis Hominis</i>	Faeces preserved	Microscopic examination for cysts	May produce diarrhoea.
Blastomycosis (See North American blastomycosis)				
Bornholm disease (See Coxsackie-virus infections)				
Botulism (See Food poisoning; Wound infections)				
Boutonneuse fever (See Rickettsial infections)				
Brill's disease (See Rickettsial infections)				
Bronchiolitis, of infants	Respiratory syncytial virus; adenoviruses; parainfluenza viruses; coronaviruses; influenza	Throat washings	Virus isolation	The term "bronchiolitis" as used here refers to an illness of infants, most commonly caused by the respiratory syncytial virus.
		Throat swab	Direct Immunofluorescence for RSV	
		Nasal swab		
		Aspirated secretion		
		Autopsy material (lung)		
		Blood, clotted or serum (acute and convalescent)		
Bronchopneumonia (See Bronchiolitis, of infants, Pneumonia)				
Brucellosis	<i>Brucella abortus</i>	Blood, clotted or serum	Serology	Serology for Br. abortus done routinely.
Brugiasis (See Filariasis)				
Burns, infected	Various aerobic and anaerobic bacteria	Swab from lesions	Microscopic examination and culture	
Campylobacter enteritis Campylobacter jejuni (See Diarrhoea, bacterial)				
CMV (See Cytomegalovirus infections)				
Candidiasis	<i>Candida albicans</i> <i>Candida</i> species	Sputum (if pulmonary involvement)	Microscopic examination and culture	
		Mouth, throat, cervical or vaginal swabs		
		Skin and nail scrapings		
		Urine (midstream or catheter)		
		Blood (whole blood only)	Culture only	Culture only done after consultation. Please consult Provincial Lab Mycology Service.
		Blood (clotted or serum only)	Serology	Referred to another Laboratory.
Candidosis (See Candidiasis)				
Carditis (See Coxsackie-virus infections)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Cat-scratch fever	Not established with certainty. A bacterium may be responsible		Tests not available	
Cellulitis (See Streptococcal infections)				
Cervicitis Tests Performed	Gonococcus	Endocervical swabs	Microscopic examination and culture	Enzyme immunoassay test available on cervical swabs. Other tests available only on consultation
	Other bacteria	Vaginal (posterior fornix) swabs	Microscopic examination and culture	
	Chlamydia trachomatis	Cervical scrapings Cervical swab	Enzyme immunoassay Chlamydia culture Direct FA Test	
	Herpes simplex and other viruses	Cervical scrapings Cervical swab	Virus isolation	
Chagas' disease (See Trypanosomiasis, American)	Trypanosoma cruzi			
Chancre, of syphilis (See Syphilis)				
Chancre, soft (See Chancroid)				
Chancroid (soft chancre)	<i>Haemophilus ducreyi</i>	a) chancroidal ulcer b) small vesicles and pustules c) inguinal d) urethral discharge	Microscopic examination and culture	Exudate should also be examined for T. pallidum by slide
Chickenpox, varicella (See Herpesvirus infections)				
Chinese liver fluke disease (See Clonorchiasis)				
Chlamydial infections (conjunctivitis, newborn conjunctivitis, vaginitis, cervicitis, non-specific urethritis, lymphogranuloma venereum, pelvic inflammatory disease, salpingitis, prostaticitis, sterility, Reiter's disease, pneumonia, infants' pneumonia, psittacosis, ornithosis)	— Chlamydia trachomatis (formerly TRIC agents and LGV) — Chlamydia psittaci (formerly psittacosis, ornithosis)	Throat washings	Enzyme immunoassay Chlamydia culture Direct FA testing	Enzyme immunoassay tests available on cervical, urethral and conjunctival swabs. Other tests available only on consultation. Serology used for LGV and psittacosis only.
		Throat swabs		
		Sputum		
		Pus		
		Conjunctival swab or scrapings		
		Cervical swabs		
		Urethral swab		
		Prostatic fluid		
		Semen		
		Joint fluid		
Chlamydial infections	— Chlamydia trachomatis (LGV)	Blood, clotted or serum (acute and convalescent)	Virus serology	Complement fixation tests are used in this laboratory to aid in the serologic diagnosis of chlamydial infections. Such serology is limited to LGV and psittacosis/ornithosis infections. It is of no value in the diagnosis of ocular and genital chlamydia trachomatis infections.
	— Chlamydia psittaci			
Cholera Asiatic or epidemic cholera	<i>Vibrio cholerae</i> (<i>Vibrio comma</i>), including the EL Tor biotype	Faeces	Culture	Not endemic in Canada, but sporadic cases in travellers from endemic areas may occur.
		Serum	Serology	This test is referred to another laboratory

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Chromomycosis	<i>Phialophora verrucosa</i> <i>Fonseca pedrosoi</i> , <i>Fonseca compacta</i> , <i>Wangiella dermatitidis</i>	Scales from skin lesions	Microscopic examination and culture	History essential.
		Pus		
		Granulation tissue curettings		
		Biopsy of granulation tissue		
Cladosporiosis	<i>Cladosporium bantianum</i>	Biopsy material from brain abscess	Microscopic examination and culture	History essential.
		Pus from brain abscess		
		Exudate from skin ulcer		
Clonorchiasis (See Heterophyiasis)	<i>Clonorchis sinensis</i> , the Chinese Liver fluke	Faeces	Microscopic examination for eggs	This is a liver parasite. Occurs in Japan, China, Korea, Indochina and Formosa
	<i>O. felinus</i>	Faeces	Microscopic examination for eggs	Occurs in Central and Eastern Europe, USSR (Siberia) and Far Eastern Asia; liver parasite
	<i>O. viverrini</i>	Faeces	Microscopic examination for eggs	Thailand; liver parasite
	<i>Metorchis conjunctus</i>	Faeces	Microscopic examination for eggs	North America mainly in Indians; liver parasite
Coccidioid granuloma (See Coccidioidomycosis)				
Coccidioidomycosis	<i>Coccidioides immitis</i>	Sputum	Microscopic examination and culture	Travel history essential.
		Aspirated material		
		Pleural fluid		
		Gastric washings		
		Bronchial washings		
		Biopsy material		
		Cerebrospinal fluid		
		Blood, clotted or serum	Serology	Referred to another laboratory.
Coccidiosis	<i>Isospora belli</i> , <i>Sarcocystis hominis</i> , <i>S. suihominis</i>	Faeces	Microscopic examination for oocysts or sporocysts	World-wide in distribution
		Duodenal contents		
		Duodenal mucosa (Biopsy, autopsy)		
Cold sore (See Herpesvirus infections)				
Colorado tick fever (See Arbovirus infections)				
Common cold, or minor respiratory illness (See also Rhinovirus infections)	Numerous viruses including: rhino-, adeno-, parainfluenza, measles, influenza, coxsackie-, echo-, and corona-viruses; also chlamydial agents	Nasal swabs	Virus isolation	
		Throat washings		
		Throat swab		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Condyloma (See Warts)				
Congenital infections, caused by microbial agents (See Cytomegalovirus infections; Listeriosis; Rubella, congenital rubella syndrome; Malaria; Toxoplasmosis)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Conjunctivitis	<i>Neisseria gonorrhoeae</i> (<i>gonococcus</i>)	Conjunctival swabs	Microscopic examination and culture	Enzyme immunoassay test available on conjunctival swabs. Other tests available only on consultation
	Other bacteria	Conjunctival swabs	Microscopic examination and culture	
	Chlamydia trachomatis	Conjunctival scrapings, swab, smear	Enzyme immunoassay Chlamydia culture Direct FA testing	
Contagious ecthyma (See Poxvirus infections)				
Contagious pustular dermatitis (See Poxvirus infections)				
Coryza (See Common cold)				
Cowpox (See Poxvirus infections)				
Coxsackievirus infections , including respiratory infections, gastroenteritis, fever and rash, myocarditis, meningitis, encephalitis, paralytic illness; also herpangina, hand-foot-and-mouth disease, and epidemic pleurodynia (Bornholm disease)	Coxsackievirus A (types 1-24); Coxsackievirus B (types 1-6)	Vesicle fluid, swab, smear	Virus isolation	
		Throat swab		
		Cerebrospinal fluid		
		Rectal swab		
		Pleural fluid		
		Pericardial fluid		
		Biopsy material		
		Autopsy material		
Croup (See Laryngitis)				
Cryptococcosis	<i>Cryptococcus neoformans</i>	Pus from skin lesions	Microscopic examination and culture	History — Bird Fancier.
		Aspirated material		
		Spinal fluid (CSF)		
		Sputum		
		Biopsy material (ulcers, lymph nodes)		
		Blood, clotted or serum, or CSF	Serology	
Cryptosporidiosis	<i>Cryptosporidium</i> species	Faeces	Microscopic examination	Diarrhoea self-limiting in immunocompetent patient.
Cutaneous larva migrans (See Hookworm disease)				
Cysticercosis (See Taeniasis)				
Cytomegalic inclusion disease (See Cytomegalovirus infections)				
Cytomegalovirus infections	Cytomegalovirus	Saliva	Microscopic examination and virus isolation	In congenital infections send specimens from mother also (cervix, urine, serum)
		Urine (see p. 19)		
		Gastric washings		
		Autopsy material		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Demodectic mange	<i>Demodex folliculorum</i> <i>D. brevis</i>	Scrapings of skin, including hair follicles and sebaceous glands	Microscopic examination for mites	World-wide in distribution
Dengue (See Arbovirus infections)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Dermatitis caused by parasites (See Hookworm disease, Schistosomal dermatitis)				
Dermatomycosis (See Dermatophytosis)				
Dermatophytosis	Members of the genus <i>Trichophyton</i> , <i>Microsporum</i> and <i>Epidermophyton</i>	Skin scrapings Nail Clippings Hair (root ends)	Microscopic examination and culture	
Diarrhoea, bacterial (See also Cholera; Food poisoning; Paratyphoid fevers; Typhoid fever)	Numerous bacteria, including, <i>Salmonella</i> , <i>Shigella</i> , Enteropathogenic, Enteroinvasive, Enterotoxigenic strains of <i>E. coli</i> , <i>Yersinia enterocolitica</i> , <i>Yersinia pseudotuberculosis</i> , <i>E. coli</i> 0157:H7, <i>Campylobacter</i> , <i>Vibrio</i> , <i>Aeromonas</i> & <i>Plesiomonas</i> species.	Faeces Vomited material Rectal swab	Culture	
Diarrhoea, parasitic (See Leishmaniasis; Malaria; Balantidiasis; Amoebic dysentery; Dientamoebiasis; Coccidiosis; Strongyloidiasis; Giardiasis; Trichinosis; Hookworm disease, Cryptosporidiosis)				
Diarrhoea, viral	Chiefly rotaviruses, adenoviruses, (Occasionally enteroviruses, calcivirus, parvovirus, coronavirus)	Faeces	Virus isolation, Electron microscopy	The most frequent agents of young children's viral gastroenteritis in winter are rotaviruses
Dientamoebiasis	<i>Dientamoeba fragilis</i>	Faeces, preserved	Microscopic examination for trophozoites	May produce mild infection, including diarrhoea, loss of weight, abdominal pain. World-wide in distribution. Several samples collected at 2-3 day intervals should be submitted.
Diphyllobothriasis	<i>Diphyllobothrium</i> spp. (broad fish tapeworm)	Faeces Segments of worm in faeces	Microscopic examination for eggs in segments	Occurs in Europe, Japan and the Orient, the Americas and Africa
Diphtheria	<i>Corynebacterium diphtheriae</i> (diphtheria bacillus) and <i>C. ulcerans</i>	Nasal swabs Throat swabs Ear swabs Swabs from skin	Microscopic examination, culture and tests for toxigenicity (if indicated)	
Dracontiasis (See Dracunculiasis)				
Dracunculiasis	<i>Dracunculus medienensis</i> (the guinea worm or Medina worm)	Biopsy of skin lesion Adult worm extracted from skin lesion	Microscopic examination for adult worms and larvae	Occurs in Africa and Asia
Dysentery, amoebic (See Amoebic dysentery)				
Dysentery, bacillary (See Diarrhoea, bacterial)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Ear infections, bacterial (See also Ootomycosis)	Several species of aerobic and anaerobic bacteria	Ear swabs Throat swabs	Microscopic examination and culture	
Eastern equine encephalitis (See Arbovirus infections)				
Echinococcosis	<i>Echinococcus granulosus</i> (the dog tapeworm)	Aspirated fluid from cyst Cyst, excised Blood, clotted or serum	Microscopic examination for hydatid "sand" (scolices) and cysts Serology	Referred to another Laboratory.
Echinococcosis	<i>Echinococcus multilocularis</i>	Aspirated fluid from cyst Cyst, excised Blood, clotted or serum	Microscopic examination of cyst and fluid Serology	Occurs in Northwestern Canada, Alaska, North Dakota, Western and Central Europe, Northeastern USSR and Japan
Echovirus infections , including respiratory infections, gastroenteritis, fever and rash, myocarditis, aseptic meningitis, encephalitis and paralytic illness	Echoviruses (types 1-34)	Vesicle fluid Throat swab Cerebrospinal fluid Rectal swab Biopsy material Autopsy material	Virus isolation	
Eczema herpeticum (See Herpesvirus infections)				
Eczema vaccinatum (See Poxvirus infections)				
Elephantiasis (See Filariasis)				
Encephalitis, amoebic (See Amoebic encephalitis, also PAME)				
Encephalitis, viral , including epidemic, sporadic and post-infectious types	Several viruses, including: arbo-, herpes-, myxo-, paramyxo-, entero-, rubella and pox-viruses	Blood, clotted Throat swab Cerebrospinal fluid Faeces Skin swab Biopsy material (brain) Autopsy material Blood, clotted or serum (acute and convalescent)	Virus isolation Virus serology	
Endemic haemoptysis (See Paragonimiasis)				
Endemic typhus, murine, flea-borne (See Rickettsial infections)				
Endocarditis, bacterial (See also Rickettsial infections)	<i>Streptococcus viridans</i> , and other bacteria	Blood for culture	Blood culture	If patient is on antibiotic therapy, indicate drug(s) in use
Enteric fever (See Typhoid fever)				
Enterobiasis	<i>Enterobius vermicularis</i> (the pinworm)	Paraffin-vaseline swab or cellophane-type tape applied to perianal region Appendix removed at operation	Microscopic examination for ova Microscopic examination for worms	World-wide in distribution

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Enteropathogenic E. coli, Enteroinvasive E. coli, Enterotoxigenic E. coli (See Diarrhoea bacterial)				
Enterovirus infections (See Coxsackievirus infections, Echovirus infections; Poliomyelitis)				
Eosinophilia, parasitic (See Amoebic dysentery; Amoebic encephalitis; Ascariasis; Trichuriasis; Coccidiosis; Hookworm disease)				Often associated with worm infections and/or with worm larvae during tissue migrating phase. Infections may not become patent until several weeks later when eosinophilia may have subsided.
Eosinophilic meningitis (See Angiostrongyliasis)				
Epidemic keratoconjunctivitis (See Coxsackievirus infections)				
Epidemic pleurodynia (See Coxsackievirus infections)				
Epidemic typhus louse-borne (See Rickettsial infections)				
Equine encephalitis, Eastern, Western or Venezuelan forms (See Arbovirus infections)				
Erysipelas (See Streptococcal infections)				
Erythrasma (Pseudomycosis)	<i>Corynebacterium minutissimum</i>	Skin scrapings from intertriginous areas	Microscopic examination only.	Please indicate specimen site.
Escherichia coli, enteropathogenic strains and O157:H7 (See Diarrhoea)				
Espundia (See Leishmaniasis, mucocutaneous form)				
European blastomycosis (See Cryptococcosis)				
Eye Infections (See Acanthamoeba keratitis; Adenovirus infections; Conjunctivitis; Keratoconjunctivitis; Keratomycosis; Chlamydial infections)				
Fascioliasis	<i>Fasciola gigantica</i> , <i>Fasciola hepatica</i>	Faeces. Repeat after several days on liver-free diet	Microscopic examination for eggs	Occurs in parts of USA, Caribbean South America, Europe, Africa, Middle East, Far East and Hawaii
Fasciolopsiasis	<i>Fasciolopsis buski</i>	Faeces	Microscopic examination for eggs	Eastern and Southeastern Asia
Favus (See Dermatophytosis)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Filariasis (See also Loiasis; Onchocerciasis)	<i>Wuchereria bancrofti</i>	Blood smear; thick and thin	Microscopic examination for microfilariae	Blood to be collected between 10 p.m. and 2 a.m. Occurs in most tropical and subtropical areas
		Blood, with anticoagulant		
		Aspiration from lymph vessels and nodes		
		Blood, clotted, or serum	Serology	Referred to another Laboratory.
	<i>Brugia Malayi</i>	As for <i>W. bancrofti</i>	As for <i>W. bancrofti</i>	Blood to be collected between 10 p.m. and 2 a.m. Occurs in Southeastern and Eastern Asia, including Japan and South Korea
	<i>Mansonella perstans</i> , <i>Mansonella ozzardi</i>	As for <i>W. bancrofti</i>	As for <i>W. bancrofti</i>	Blood to be collected any time. Occurs in Africa and/or South America
Fish tapeworm disease (See Diphylobothriasis)				
Flea-borne typhus (See Rickettsial infections)				
Foetal abnormalities caused by parasites (See Toxoplasmosis)				
Foetal abnormalities caused by viruses (See Cytomegalovirus infections; Rubella, congenital rubella syndrome)				
Food poisoning, acute bacterial and toxic forms, including botulism	<i>Staphylococcus aureus</i> , <i>Salmonella species</i> , <i>Clostridium perfringens</i> , <i>Shigella species</i> , <i>Yersinia enterocolitica</i> , <i>Campylobacter jejuni</i> , <i>C. coli</i> , <i>Bacillus cereus</i> , <i>Vibrio parahaemolyticus</i> , <i>Enterotoxigenic</i> , <i>Enteroinvasive E. coli</i> , <i>E. coli</i> O157:H7, <i>Listeria monocytogenes</i>	Remains of food consumed	Culture	
		Faeces		
		Rectal swab		
		Vomited material		
	<i>Clostridium botulinum</i>	Remains of food consumed	Presence of botulinus toxin in blood, vomited material or food is diagnostic; animal inoculation is used and the toxin is typed (usually A, B or E in man)	Send material to laboratory refrigerated but not frozen.
		Separated serum		
		Vomited material		
		Faeces		
		Autopsy material (especially liver and content of gut)		
Fungal infections (See Dermatophytosis, and individual fungal infections)				
Gastro-enteritis (See Diarrhoea; Food poisoning)				
Gas gangrene	<i>Clostridium perfringens</i> , <i>Cl. septicum</i> , <i>Cl. novyi</i> and other species of Clostridia	Swabs from lesions	Microscopic examination and culture	Anaerobic streptococci (peptostreptococci) may cause similar lesions.
		Necrotic tissue		
		Blood for culture	Blood culture	

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
German measles (See Rubella)				
Giardiasis	<i>Giardia lamblia</i>	Faeces Duodenal drainage	Microscopic examination for trophozoites and cysts	World-wide in distribution. Several samples collected at 2-3 day intervals should be submitted
Glanders	<i>Pseudomonas mallei</i>	Sputum Pus Blood for culture	Microscopic examination and culture Blood culture	A disease of horses, rarely transmitted to man Referred to another Laboratory.
Gonococcal infections , including infections of conjunctiva, urethra, vulva, vagina, cervix, rectum, ovarian tubes, pharynx, joints, as well as clinical entities known as ophthalmia neonatorum, and vulvovaginitis of children and salpingitis	<i>Neisseria gonorrhoeae</i> (gonococcus)	Swabs and smears of conjunctival, urethral, cervical, rectal, pharyngeal, or other exudate	Microscopic examination and culture	Patients should be tested serologically for double infection with syphilis.
Gonorrhoea (See Gonococcal infections)				
Granuloma inguinale (venereum)	<i>Calymmatobacterium granulomatis</i>	Biopsy material from granulation tissue at edge of lesion (punch biopsy)	Microscopic examination	Condition is uncommon in Canada. Patients should also be tested for syphilis. A skin test has been introduced but it is not recommended at the present time.
Guinea-worm disease (See Dracunculiasis)				
Haemorrhagic fevers , arthropod-borne (see Arbovirus infections; also Rickettsial infections)				
Hand-foot-and-mouth disease (See Coxsackievirus infections)				
Hansen's disease (See Leprosy)				
Hepatitis, parasitic (See Amoebic dysentery; Ascariasis; Clonorchiasis; Schistosomiasis; Trypanosomiasis; Malaria)				
Hepatitis, Viral 1) Hepatitis A (Infectious hepatitis)	Hepatitis A virus (HAV)	Blood, clotted or serum	Specific IgM in serum	Tests for Hepatitis B should also be performed.
2) Hepatitis B (Viral Serum hepatitis)	Hepatitis B virus (HBV)	Blood, clotted or serum	Hepatitis B: * — HBsAg — anti-HBs — anti-HBc (total) — anti-HBc IgM — HBeAg — anti-HBe	* According to the clinical information provided with the specimen
3) Hepatitis (nonA-nonB) (See also Cytomegalovirus)	NonA-NonB (probably several viruses)		Test for non-A, non-B not available	
Herpangina (See Coxsackievirus infections)				
Herpes simiae (virus B) infections (See Herpesvirus infections)				
Herpes simplex virus infections (See Herpesvirus infections)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Herpesvirus infections , including vesicular lesions of skin, lips, mouth and genitals; vulvo-vaginitis; "cold sores," stomatitis; keratitis; aseptic meningitis; ascending myelitis; encephalitis; disseminated herpes; infection of newborns; and specific entities of eczema herpeticum, herpes zoster or shingles, varicella or chickenpox, and virus B infection (See also Cytomegalovirus infections)	Members of the Herpesvirus group pathogenic for man are the following viruses: Herpesvirus simplex, Herpesvirus simiae (virus B) and Herpesvirus varicellae (varicella-zoster or V-Z virus); cytomegalovirus; Epstein-Barr (EB) virus is also in this group (See Mononucleosis, infectious)	Vesicle fluid	Virus isolation and Identification	Electron microscopy of brain biopsy can be done in 1-2 hours — Contact virology laboratory by phone before sending biopsy — Newborn infection — also submit specimens from mother — <i>Herpes simiae</i> is very dangerous for humans — contact Medical Officer of Health and the laboratory before collecting specimens
		Vesicle smear		
		Scrapings from base of skin lesions	Electron microscopic examination for herpes virus particles from brain, and from slides in special cases	
		Conjunctival swab		
		Conjunctival scrapings		
		Corneal scrapings		
		Cervical swab	Differentiation of herpes simplex 1 and 2 in special cases (Consult the laboratory).	
		Cervical smear		
		Vaginal swab		
		Vaginal smear from base of lesions		
		Urethral swab		
		Cerebrospinal fluid		
		Biopsy material including brain		
Autopsy material (brain, viscera)				
Blood, clotted or serum (acute and convalescent)	Virus serology	Not routinely done for genital herpes		
Heart blood from autopsy				
CSF				
Herpes zoster (See Herpesvirus infections)				
Heterophyiasis (See Clonorchiasis)	<i>Heterophyes heterophyes</i>	Faeces	Microscopic examination for eggs	Occurs in Middle East. Reported from Far East.
	<i>Metagonimus yokogawai</i>	Faeces	Microscopic examination for eggs	Far East, Balkan countries, reported from Spain
Histoplasmosis	<i>Histoplasma capsulatum</i> <i>Histoplasma duboisii</i>	Sputum	Microscopic examination, culture and animal inoculation	Histoplasma capsulatum may be present in soil contaminated by birds and bats Travel history essential. Specimen should reach Laboratory same day, if possible.
		Gastric washings		
		Urine		
		Swab from ulcer		
		Scrapings from ulcer		
		Bone marrow material (in saline)		
		Blood with citrate		
		Biopsy material (lymph nodes)		
		Cerebrospinal fluid		
		Blood, clotted or serum	Serology	
Hookworm disease, ancylostomiasis (See also Trichostrongyliasis)	<i>Ancylostoma duodenale</i> , <i>Necator americanus</i>	Faeces	Microscopic examination for eggs and larvae	Widespread distribution
	<i>Ancylostoma brasiliense</i> , <i>Ancylostoma caninum</i>	Scrapings of skin from larval tracks	Microscopic examination for larvae	
HIV (human immunodeficiency virus)	(See AIDS)			
HTLV III (human T-lymphotropic virus III)	(See AIDS)			
Hydatidosis (See Echinococcosis)				
Hymenolepiasis	<i>Hymenolepis nana</i> , <i>H. diminuta</i>	Faeces	Microscopic examination for eggs and segments	World-wide in distribution

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Impetigo contagiosa (See Streptococcal infections; Staphylococcal infections)				
Inclusion blennorrhoea (See Chlamydial infections)				
Inclusion body encephalitis (See Measles)				
Inclusion cervicitis (See Chlamydial infections)				
Inclusion conjunctivitis (See Chlamydial infections)				
Inclusion urethritis (See Chlamydial infections)				
Infectious hepatitis (See Hepatitis, viral)				
Infectious mononucleosis (See Mononucleosis, infectious)				
Influenza	Influenza viruses types A and B, and rarely C; Influenza viruses are members of the Orthomyxovirus group	Throat swab	Virus isolation, identification and strain typing	
		Nasal swab		
		Autopsy material (lung)		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Interstitial plasma cell pneumonia (See Pneumonia, caused by <i>Pneumocystis carinii</i>)				
Isosporosis (See Coccidiosis)				
Japanese encephalitis (See Arbovirus infections)				
Kala Azar (See Leishmaniasis, visceral form)				
Kaposi's varicelli-form dermatitis (See Herpesvirus infections; Poxvirus infections)				
Kerato-conjunctivitis, viral (See Adenovirus infections; Herpesvirus infections)				
Keratomycosis	Many fungi	Corneal scrapings	Culture (always evaluated by microscopic findings of scrapings)	Many fungi isolated from this condition are "opportunists" encouraged to infect by use of steroids and antibiotics
LAV (lymphadenopathy-associated virus)	(See AIDS)			
LCM (See Lymphocytic choriomeningitis)				
LGI (LGV) (See Chlamydial infections)				
Larva migrans, cutaneous form (See Hookworm disease) visceral form (See Toxocariasis)				
Laryngitis, and acute laryngotracheobronchitis (croup), bacterial form	<i>Corynebacterium diphtheriae</i> , <i>Haemophilus influenzae</i> , <i>Streptococcus pyogenes</i> and other organisms	Aspirated respiratory secretion	Microscopic examination and culture	
		Throat washings		
		Throat swab		
		Nasal swab		

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Laryngitis, and acute laryngotracheobronchitis (croup), viral form	Several viruses, including: adeno-, parainfluenza, measles, respiratory syncytial, influenza, rhino-, and echoviruses	Throat washings	Virus isolation, identification	
		Throat swab		
		Nasal swab		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Legionnaire's Disease	<i>Legionella</i> species	Pleural fluid, Lung tissue	Direct FA and culture	General Bacteriology. (Serology not available at this laboratory)
Leishmaniasis, cutaneous form	<i>Leishmania tropica</i>	Biopsy from edge or base of lesions in skin	Microscopic examination for Leishmania bodies; culture	This is the common form of leishmaniasis in the "Old World," occurring in Southern USSR, Mediterranean, Middle East, Northern India, West Pakistan and Africa
		Smear from edge or base of lesion		
Leishmaniasis, mucocutaneous form	<i>L. brasiliensis</i> , <i>L. mexicana</i>	Biopsy from edge or base of skin lesions	Microscopic examination for Leishmania bodies; culture	The "New World," leishmaniasis, occurs in Mexico, Central and South America
		Smear from edge or base of lesion		
Leishmaniasis, visceral form (Kala Azar)	<i>L. donovani</i> (<i>infantum</i>)	Thick and thin blood films	Microscopic examination for Leishmania bodies; culture	Common in most warm countries, including Southern Europe
		Bone marrow films		
		Biopsy material (spleen, liver, lymph nodes)		
		Blood with anti-coagulant		
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Leprosy	<i>Mycobacterium leprae</i>	Nasal scrapings	Microscopic examination for acid-fast bacilli, including intracellular forms. Culture to exclude presence of other mycobacteria	<i>M. Leprae</i> can be identified only by morphology; it does not grow in culture nor infect animals
		Biopsy of tissue affected, usually skin nodules		
Leptospirosis including Weil's disease	Many different serotypes including <i>Leptospira icterohaemorrhagiae</i> , <i>L. canicola</i> and <i>L. pomona</i>	Blood, clotted	Microscopic examination, culture	Natural reservoirs of infection include rats, cattle, dogs and pigs. Leptospire are excreted in animal urine, and human infection may be contracted from rivers, lakes or wet soil. Referred to another Laboratory.
		Urine ¹		
		Autopsy material (liver, kidneys)		
		Blood, clotted or serum	Serology	
Listeriosis	<i>Listeria monocytogenes</i>	Blood for culture	Blood Culture	Reservoir in wild and domestic mammals. Infants may be infected from mother at birth
		Cerebrospinal fluid	Culture	
		Vaginal swab	Culture	
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Liver abscess (See Amoebic dysentery; Ascariasis)				
Loiasis (See also Filariasis)	<i>Loa loa</i> (the African eyeworm)	Thick and thin blood films	Microscopic examination for microfilariae	Blood to be collected between 10 a.m. and 2 p.m.
		Blood with anticoagulant		
Louse-borne epidemic typhus (See Rickettsial infections)				
Lousiness (See Pediculosis)				
Lung fluke disease (See Paragonimiasis)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Lyme disease	<i>Borrelia burgdorferi</i>	Blood	Serology	
Lymphadenopathy (See especially, Mononucleosis, infectious; Cytomegalovirus; Cat-scratch fever; Sporotrichosis; Histoplasmosis; Paracoccidioidomycosis)				
Lymphocytic choriomeningitis (LCM)	<i>Lymphocytic choriomeningitis virus</i>	Blood, clotted	Virus isolation	Natural reservoir and usual source of human infection is the mouse (<i>Mus musculus</i>). Increase in antibody may be delayed for some months
		Throat washings		
		Urine		
		Cerebrospinal fluid		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Lymphogranuloma inguinale (venereum) (See Chlamydial infections)				
Madura foot (See Mycetoma)				
Maduromycosis (See Mycetoma)				
Malaria	<i>Plasmodium vivax</i> , <i>P. malariae</i> , <i>P. ovale</i> and <i>P. falciparum</i>	Thick and thin blood films from finger-blood at height of paroxysm and 8-16 h later	Microscopic examination for malaria parasites	Occurs in Africa, Asia, South-western Pacific, Central and South America and rarely elsewhere
Mange (See Demodectic mange; Scabies)				
Measles, Morbilli, "red measles," rubeola , including the following diseases associated with measles virus: Hecht's giant cell pneumonia; subacute sclerosing panencephalitis (SSPE)	Virus of measles, a member of the paramyxovirus group	Nasal swab	Virus isolation	For SSPE send CSF and serum for virus serology
		Throat swab		
		Cerebrospinal fluid		
		Autopsy material (lung, brain)		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Mediterranean fever (See Brucellosis)				
Melioidosis (See Glanders)				
Meningitis, bacterial (See also Meningococcal infections)	<i>Escherichia coli</i> , <i>Haemophilus influenzae</i> (influenza bacillus), <i>Leptospira</i> species, <i>Listeria monocytogenes</i> , <i>Mycobacterium tuberculosis</i> , <i>Neisseria meningitidis</i> , <i>Pseudomonas aeruginosa</i> , <i>Staphylococcus aureus</i> , <i>Streptococcus pneumoniae</i> (pneumococcus), <i>Streptococcus pyogenes</i> , <i>Streptococcus</i> Group B and other species	Nasal swabs	Microscopic examination and culture	
		Throat swabs		
		Cerebrospinal fluid		
		Blood culture	Blood culture	
		Swabs from any possible source of infection	Microscopic examination and culture	
		Blood, clotted or serum	Serology	
				Referred to appropriate Laboratory.

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Meningitis, parasitic (See Amoebic encephalitis; Angiostrongyliasis, PAME)				
Meningitis, viral or aseptic	The commonest viruses are as follows: coxsackie A and B, echo, mumps, measles, epidemic encephalitis (Eastern, Western or St. Louis). Less common causes are lymphocytic choriomeningitis, poliomyelitis, herpes simplex, infections mononucleosis, varicellazoster, rubella, other arboviruses, influenza and adenoviruses	Throat swab	Virus isolation	
		Saliva		
		Rectal swab		
		Vesicle fluid (skin)		
		Cerebrospinal fluid		
		Urine		
		Autopsy material (brain, cord, intestinal contents)	Virus serology	
		Blood, clotted or serum (acute and convalescent)		
Meningococcal infections, including meningitis and meningococcaemia	<i>Neisseria meningitidis</i> (the meningococcus)	Throat swab	Microscopic examination and culture	
		Posterior nasopharyngeal swab	Culture	
		Cerebrospinal fluid	Microscopic examination and culture	
		Blood culture	Microscopic examination and culture	
		Posterior nasopharyngeal swab	Microscopic examination and culture	
Meningoencephalitis, parasitic (See PAME)				
Meningoencephalitis, viral (See Meningitis, viral)				
Mite-borne typhus, scrub typhus (See Rickettsial infections)				
Molluscum contagiosum (See Poxvirus)				
Mononucleosis, infectious	EB virus, a member of the herpesvirus group	Blood, clotted or serum	Antibodies to EB virus (VCA and EBNA) by enzyme immunoassay Heterophile test (monospot) should be performed before requesting EBV-specific serology. Include results of monospot with test request.	
Mucormycosis (See Phycomycosis)				
Mumps including mumps meningoencephalitis, pancreatitis, orchitis	Mumps virus, a member of the paramyxovirus group	Saliva	Virus isolation	
		Throat swab		
		Cerebrospinal fluid		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Murine, flea-borne typhus (See Rickettsial infections)				
Myalgia, epidemic (See Coxsackievirus infections)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Mycetoma Actinomycotic (aerobic actinomycetes) and Eumycotic	<i>Nocardia sp.</i> , <i>Streptomyces sp.</i> , <i>Petriellidium boydii</i> , <i>Acremonium falciforme</i> , <i>Madurella grisea</i> , <i>Madurella mycetomii</i> , <i>Exophiala jeanselmei</i> and other filamentous (mold type) fungi	Purulent exudate from sinuses Aspirated material from fluctuant areas Biopsy material	Microscopic examination and culture	Case history essential.
Mycobacterial infections, Mycobacteriosis (See Tuberculosis)				
Mycoplasma infections , of the respiratory tract	<i>Mycoplasma pneumoniae</i>	Blood, clotted or serum (acute and convalescent)	Serology. Submit specimens to virus serology lab.	
Mycotic (fungal) infections (See Dermatophytosis; and under individual fungal infections)				
Myiasis	Maggots	Maggots, living	Usually necessary to rear adult fly from maggot, to identify	
		Maggots	Microscopic examination	
Myocarditis, parasitic (See Trypanosomiasis; Trichinosis; Toxoplasmosis)				
Myocarditis, viral (See Coxsackievirus infections)				
NGU (See Non-specific urethritis)				
NSU (See Non-specific urethritis)				
Nasal infections	Various bacteria including <i>Staphylococcus aureus</i> , <i>Corynebacterium diphtheriae</i> <i>Mycobacterium leprae</i>	Nasal swabs Nasal washings	Microscopic examination and culture	
		Nasal scrapings	Modified Ziehl-Neelsen stain, and culture for other mycobacteria	
Necrotizing encephalitis (See Herpesvirus infections)				
Nephritis, acute glomerulo	Sequel to <i>Streptococcus pyogenes</i> infection	Throat or skin swabs	Microscopic examination and culture	Antistreptolysin O titres (ASO)
		Blood, clotted or serum	Serology	
Nocardiosis	<i>Nocardia asteroides</i>	Sputum	Microscopic examination and culture	
		Pleural fluid		
		Purulent exudate from sinuses		
		Purulent material from abscesses		
		Urine		

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Non-specific urethritis (non gonococcal urethritis) (See also Trichomoniasis)	Various bacteria, including strains of <i>Gardnerella</i> , <i>Neisseria</i> , <i>Staphylococcus</i> , <i>Streptococcus</i>	Urethral swabs	Microscopic examination and culture	
	Trichomonas	Urethral swabs	Microscopic examination and culture	
	Mycoplasma, especially T-strains	Urethral swabs	Microscopic examination and culture	Mycoplasma testing not done.
	<i>Chlamydia trachomatis</i>	Urethral scrapings, urethral, vaginal, cervical swabs	Enzyme immunoassay Chlamydia Culture Direct FA test	Enzyme immunoassay test available on urethral swabs. Other tests available only on consultation.
	<i>Herpes simplex</i> and other viruses	Urethral scrapings, vaginal, cervical swabs	Virus isolation	
North American blastomycosis	<i>Blastomyces dermatitidis</i>	Scrapings from skin lesions	Microscopic examination and culture	Endemic in Ontario History essential
		Purulent exudate from base of skin lesions		
		Aspirated material from abscesses		
		Sputum		
		Cerebrospinal fluid		
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Onchocerciasis (See also Filariasis; Loiasis)	<i>Onchocerca volvulus</i> , <i>Mansonella streptocerca</i>	Biopsy of skin	Microscopic examination for microfilariae	<i>O. volvulus</i> occurs in Middle East, Africa, Central and South America; <i>M. streptocerca</i> in Africa
		Aspirated material from skin nodules	Microscopic examination for microfilariae and search for adults	
		Blood, clotted or serum	Serology	Referred to another Laboratory.
		Excision of nodule	Search for adult worm	
Oophoritis, viral (See Mumps)				
Ophthalmia neonatorum (See Gonococcal infections, Chlamydial infections)				
Orchitis, viral (See Mumps)				
Oriental sore (See Leishmaniasis, cutaneous form)				
Ornithosis (See Psittacosis, Chlamydial infections)				
Oroya fever (See Bartonellosis)				
Osteomyelitis, acute (See also Staphylococcal infections)	<i>Staphylococcus aureus</i> and other bacterial species	Purulent discharge	Microscopic examination and culture	
		Aspirated pus, by puncture		
		Blood for blood culture	Blood culture	
Otitis media (See Ear infections)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Otomycosis	<i>Aspergillus niger</i> , <i>Aspergillus species</i> , <i>Candida species</i> , <i>Mucor species</i> , <i>Rhizopus species</i> , <i>Trichophyton species</i> , <i>Epidermophyton floccosum</i>	Debris from ear canal	Microscopic examination and culture	Primary infection is often bacterial
Ovaritis, viral (See Mumps)				
Oxyuriasis (See Enterobiasis)				
PAME (Primary Amoebic Meningo Encephalitis)	<i>Naegleria sp.</i> (<i>Hartmannella sp.</i>) (<i>Acanthamoeba sp.</i>) Others	Nasal swab Spinal fluid Autopsy material, fresh, preserved	Microscopic examination for trophozoites and cysts, and culture	Infection acquired from swimming or playing in stagnant pools, soil, etc.
PAP (See Mycoplasmal infections)				
PC fever (See Adenovirus infections)				
PLT agents (See Chlamydial infections)				
PUO (See Pyrexia of unknown origin)				
Pancreatitis, viral (See Mumps)				
Panencephalitis, subacute, sclerosing (See Measles)				
Paracoccidioid (See Paracoccidioidomycosis)				
Paracoccidioidomycosis	<i>Paracoccidioides brasiliensis</i>	Mouth (or lip) swab Mouth (or lip) scrapings Skin (facial) swab Skin (facial) scrapings Pus Sputum Biopsy material (lymph nodes) Blood (whole blood) Blood (clotted) Blood serum	Microscopic examination and culture Culture only Serology	Travel history essential Culture only done after consultation. Please consult Provincial Lab Mycology Service.
Paragonimiasis	<i>Paragonimus spp.</i> (the lung fluke)	Faeces Sputum Blood	Microscopic examination for eggs Serology	Occurs in Far East, Southeastern Asia, Southwestern Pacific, Africa, South America Referred to another Laboratory.
Parainfluenza virus infections , including colds, pharyngitis, laryngitis, bronchiolitis, pneumonia	Three types of <i>parainfluenza</i> virus are pathogenic for man (Types 1, 2 and 3). <i>Parainfluenza</i> viruses belong to the <i>Paramyxovirus</i> group	Throat washings Throat swab Sputum Autopsy material (lung) Blood, clotted or serum (acute and convalescent)	Virus isolation Virus serology	

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Parasitic infections (See under individual parasitic infections)				
Paralytic illnesses, caused by viruses (See also Encephalitis, viral)	Several viruses especially <i>polio-</i> , <i>coxsackie-</i> , <i>echo-</i> , and <i>herpesviruses</i> , and as part of encephalomyelitis, or ascending myelitis syndromes	Throat swab	Virus isolation	
		Cerebrospinal fluid		
		Faeces		
		Biopsy material (brain, cord)		
		Autopsy material (brain, cord)		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Paratyphoid fevers (A, B or C), also described as "para" A, B or C (See also Typhoid fever)	<i>Salmonella paratyphi</i> A, B or C	Faeces	Culture	
		Urine		
		Blood, for blood culture	Blood culture	
Paronychia, mycotic	<i>Candida albicans</i> and <i>Candida species</i>	Nail scrapings (base of nail)	Microscopic examination and culture	Referred to another Laboratory. History essential.
		Blood, clotted or serum	Serology	
Pasteurella infections (See also Yersinia infections; Plague)	<i>Pasteurella multocida</i>	Swab from bite wound	Microscopic examination and culture	Transmitted by bites of animals; also a respiratory form
		Sputum		
		Urine		
		Blood for blood culture		
Pediculosis	<i>Pediculus humanus capitis</i> (head louse), <i>Pediculus humanus corporis</i> (body louse), <i>Phthirus pubis</i> (crab louse)	Adults, nymphs, or eggs ("nits"); hair; underclothing	Microscopic identification of species	World-wide in distribution
Pertussis (See Whooping cough)				
Pharyngitis, bacterial (See also Streptococcal infections; Diphtheria)	Several species of bacteria, especially <i>Streptococcus pyogenes</i> , <i>Corynebacterium diphtheriae</i> , <i>Corynebacterium ulcerans</i> , and <i>Neisseria gonorrhoeae</i>	Throat washing	Microscopic examination and culture	
		Throat swabs		
Pharyngitis, viral (See also under individual viruses)	Several viruses, especially <i>adeno-</i> , <i>rhino-</i> , <i>coxsackie-</i> , and <i>echoviruses</i> ; also respiratory syncytial virus	Throat washings	Virus isolation	
		Throat swab		
		Faeces		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Piedra, white	Caused by <i>Trichosporon beigelii</i>	Hair clippings	Microscopic examination and culture	World-wide in distribution
Piedra, black	Caused by <i>Piedraia hortai</i>	Hair clippings	Microscopic examination and culture	Tropical and sub-tropical areas

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Pinta	<i>Treponema carateum</i>	Exudate from lesions	Darkfield examination for spirochaetes	A nonvenereal treponematosi, occurring in acute and chronic form, mainly in children. Common in Mexico, Colombia, Venezuela and Ecuador, and many other countries
		Blood, clotted or serum	Tests for syphilis	
Pinworm disease (See Enterobiasis)				
Pityriasis versicolor	<i>Malassezia furfur</i>	Skin scrapings or scales	Microscopic examination only	
Plague	<i>Yersinia pestis</i> (synonym, <i>Pasteurella pestis</i>) known as the plague bacillus	Pus from buboes	Culture	
		Sputum		
		Throat swab		
		Blood for culture	Blood culture	
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Plasma cell pneumonia (See Pneumonia, caused by <i>Pneumocystis carinii</i>)				
Pleurodynia, epidemic (See Coxsackievirus infections)				
Pneumonia, atypical (primary atypical pneumonia) (See Mycoplasmal infections)				
Pneumonia, bacterial	Several bacterial species, especially: <i>Streptococcus pneumoniae</i> , <i>Streptococcus pyogenes</i> , <i>Staphylococcus aureus</i> , <i>Klebsiella pneumoniae</i> , <i>Haemophilus influenzae</i> , <i>Mycoplasma pneumoniae</i> and <i>Legionnaire's disease bacterium</i>	Apirated respiratory secretion	Microscopic examination and culture	See each organism
		Nasal swab		
		Throat swab		
		Throat washings		
		Sputum		
		Blood, clotted or serum (acute and convalescent)	Serology and IFA (Indirect Fluorescent Antibody)	
Pneumonia	<i>Pneumocystis carinii</i>	Biopsy material (lung)	Microscopic examination of lung tissue (stained touch prep.)	World-wide in distribution. A disease of the newborn and immunologically incompetent (AIDS, congenital)
		Autopsy material (lung)		
		Sputum is not usually satisfactory		
Pneumonia of Infants (See Chlamydial infections)				
Pneumonia, parasitic (See Ascariasis; Hookworm disease; Strongyloidiasis)				
Pneumonia, psittacosislike (See Chlamydial infections)				
Pneumonia, rickettsial (See Q fever)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Pneumonia, viral	Numerous viruses cause pneumonia, including <i>adeno-</i> , <i>influenza</i> , <i>para-influenza</i> , <i>measles</i> , <i>respiratory syncytial</i> , <i>variola</i> , <i>cyto-</i> , <i>megalo-</i> , and <i>herpesviruses</i>	Aspirated respiratory secretion	Virus isolation	
		Nasal swab		
		Throat swab		
		Sputum		
		Autopsy material (lung)	Virus serology	
		Blood, clotted or serum (acute and convalescent)		
Pneumocystis pneumonia (See Pneumonia, caused by <i>Pneumocystis carinii</i>)				
Poliomyelitis, acute anterior, also known as "polio" (See also Coxsackievirus infections; Echovirus infections)	<i>Polioviruses</i> (types 1, 2 and 3)	Throat swab	Virus isolation	
		Rectal swab		
		Cerebrospinal fluid		
		Autopsy material (brain, cord, intestinal contents)		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Pork tapeworm disease (See <i>Taeniasis</i>)				
Poxvirus infections	Following members of <i>Poxvirus</i> group: smallpox, cowpox, vaccinia, contagious pustular dermatitis (Orf), Milker's nodes (paravaccinia) and molluscum contagiosum	Scrapings from rash	Virus isolation, electron microscopy	Smallpox has been eradicated. If suspected, contact Medical Officer of Health immediately, before taking any specimens
		Vesicle fluid		
		Exudate from skin lesions		
		Skin crusts		
		Blood, clotted or serum (acute and convalescent)	Virus serology	
Primary Amoebic Meningo Encephalitis (See PAME)				
Prostatitis	<i>Chlamydia trachomatis</i>	Prostatic fluid	Culture	Chlamydia testing available only on consultation.
Pruritus ani (See Enterobiasis; Candidiasis)				
Pseudotuberculosis (See <i>Yersinia</i> infections)				
Psittacosis (See Chlamydial infections)				
Puerperal fever (See Streptococcal infections)				
Pyelitis (See Urinary tract infections, bacterial)				
Pyrexia of unknown origin (PUO)	Infections due to various bacteria and other agents	Faeces	Culture	A wide range of investigations may have to be carried out, including tests for bacterial, viral, chlamydial, mycotic and parasitic infections See appropriate sections. Consult Serology.
		Urine		
		Blood for blood culture		
		Blood, clotted or serum	Serological tests for brucellosis, tularaemia and other infections. Tube agglutination test. Viral serology.	

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Q fever (See Rickettsial infections)				
Queensland tick typhus (See Rickettsial infections)				
Rabies	Rabiesvirus, a member of the <i>Rhabdovirus</i> group			If animal bite, notify Medical Officer of Health immediately. If antibody test, submit blood, clot- ted or serum, and state reason for request, (i.e., Post Vaccine)
Rashes (exanthems), in viral infections (See under individual virus and Rickettsial infections)				
Rat-bite fever, Haverhill fever	<i>Streptobacillus moniliformis</i>	Exudate from primary lesion Blood for blood culture Fluid from lymph glands Fluid from joints Pus	Microscopic examina- tion; isolation and identi- fication by culture and animal inoculation	Occasionally seen in North America
Rat-bite fever, Sodoku	<i>Spirillum minus</i>	Exudate from primary lesion Blood smears Blood, preserved	Microscopic examination by darkfield and stain- ing; animal inoculation Microscopic examination Animal inoculation	Occasionally seen in North Amer- ica. The common rat-bite fever of Japan and the Orient
Recrudescent typhus, Brill's disease (See Rickettsial infections)				
Reiter's syndrome (See Non-specific urethritis)				
Relapsing fever, louse or tick-borne	<i>Borrelia recurrentis</i> (a spirochaete)	Blood		Louse-borne form occurs in parts of Asia, Africa and South Amer- ica. Tick-borne form occurs in Africa, parts of Middle East and Western USA. Serology sent to C.D.C. Atlanta
Reovirus infections, including upper respiratory infections and diarrhoea	<i>Reoviruses</i> , types 1, 2 and 3	Throat swab Faeces Rectal swab	Virus isolation	
Respiratory infections, acute bacterial (See also under individual syndromes and diseases)	Several bacterial species, especially <i>Streptococcus pyo- genes</i> , <i>Corynebacterium diphther- iae</i> , <i>Staphylococcus aureus</i> , <i>Strep- tococcus pneu- moniae</i> , <i>Haemo- philus influenzae</i> , <i>Mycoplasma pneumoniae</i> , <i>Legionnaire's dis- ease bacterium</i>	Aspirated respiratory secretion Throat washings Throat swabs Sputum Blood for blood culture Blood, clotted or serum	Microscopic examination and culture Blood culture Serology	See individual organisms.
Respiratory infections, acute viral (See also under individual syndromes and diseases)	Numerous viruses, especially <i>adeno- rhino-</i> , <i>coxsackie-</i> , <i>influenza</i> , <i>parain- fluenza</i> , and <i>respi- ratory syncytial virus</i> , also chlamy- dial agents	Aspirated respiratory secretion Throat washings Throat swab Sputum Blood, clotted or serum (acute and convalescent)	Virus isolation Virus Serology	

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES	
Respiratory syncytial virus infections	Respiratory syncytial virus	Aspirated respiratory secretion	Virus isolation	Virus is unstable and specimens should not be frozen; inoculation within 4 hours of collection is desirable. Direct immunofluorescence is an acceptable alternative when specimens must be transported.	
		Throat washings	Direct immunofluorescence		
		Autopsy material (lung)			
		Blood, clotted or serum (acute and convalescent)	Virus Serology		
Rheumatic fever	A sequel to upper respiratory infections with <i>Streptococcus pyogenes</i>	Throat swabs	Microscopic examination and culture		
		Blood, clotted or serum (repeated if necessary)	Antistreptolysis O titre (ASO) Serology		
Rhinovirus infections, including the common cold and acute laryngo-tracheobronchitis	Rhinoviruses, of about 100 different types		These viruses are not routinely cultivated.		
Rickettsial infections					
1. Louse-borne typhus Epidemic typhus Brill's disease Trench fever	<i>Rickettsia prowazekii</i> <i>R. prowazekii</i> <i>R. quintana</i> <i>R. typhi</i> (mooseri) <i>R. tsutsugamushi</i> (orientalis)	Blood, clotted or serum (acute and convalescent)	Serology, specific for rickettsial antibodies; submit specimens to virus serology.	The diagnosis of rickettsial infections by isolation of the causal organisms is a dangerous procedure. Contact laboratory before proceeding	
2. Flea-borne typhus			Serology (non-viral)		Weil Felix test.
3. Tsutsugamushi fever					
4. Tick-borne typhus					
a. Rocky Mountain spotted fever					
b. Siberian tick typhus					
c. Fievre boutonneuse, S. African, Indian and Kenya tick typhus					
d. Queensland tick typhus					
5. Rickettsialpox	<i>R. australis</i>				
6. Q fever	<i>R. akari</i> <i>Coxiella burnetii</i>				
Rickettsialpox (See Rickettsial infections)					
Ringworm (See Dermatophytosis)					
Rocky Mountain spotted fever (See Rickettsial infections)					
Roseola infantum	Presumed viral, but no virus yet recognized as causal	No specific tests available	No specific test available	Exclude presence of viral infections associated with rash	
Rubella, abortion associated with rubella or rubella vaccination	Rubella virus	Aborted material	Virus isolation		
		Placenta			
		Throat washings			
		Throat swab			
		Blood, clotted or serum (acute and convalescent)	Virus serology, including specific IgM		

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Rubella, congenital rubella syndrome (CRS)	<i>Rubella virus</i>	Throat swab	Virus isolation	Send a throat swab, rectal swab and urine on post-partum Day 1, Day 3 and Day 5 (see page 19)
		Urine		
		Rectal swab		
		Cerebrospinal fluid		
		Lens fluid		
		Autopsy material (all organs)		
		Blood, clotted or serum	Virus serology, including tests for specific IgM; repeat if necessary	Submit blood from mother also
Rubella, postnatal (i.e. in children and adults) (See also Rubella, abortion; and Rubella, congenital rubella syndrome)	<i>Rubella virus</i>	Blood, clotted or serum (acute and convalescent)	Virus serology	
Rubeola (See Measles)				
SSPE (See Measles)				
Salivary gland virus infection (See Cytomegalovirus infections)				
Salmonellosis (See also Typhoid Fever and Paratyphoid Fevers)	<i>Salmonella</i> species	Faeces	Culture	
		Vomited material	Culture	
Salpingitis (See Gonococcal, Chlamydial and Mycoplasmal infections)				
Scabies	<i>Sarcoptes scabiei</i>	Scrapings of skin at end of tracks, fresh	Microscopic examination for mites	World-wide in distribution
		Scrapings of skin, in fixative		
Scarlet fever, scarlatina (See Streptococcal infections)				
Schistosomiasis (See also Schistosomal dermatitis)	<i>Schistosoma haematobium</i> (the bladder blood fluke) <i>S. mattheei</i>	Urine, afternoon voiding	Microscopic examination for eggs	<i>S. haematobium</i> causes infection in the Middle East, Portugal and Africa. Human infections by <i>S. mattheei</i> have been reported from South Africa and Rhodesia
		Biopsy material (bladder mucosa)	Parasitology	
		Blood, clotted or serum	Serology — Referred to another Laboratory	
	<i>Schistosoma japonicum</i> (the oriental blood fluke)	Faeces	Microscopic examination for eggs	<i>S. japonicum</i> occurs in Japan, China, Philippines and other parts of the Orient
		Blood, clotted or serum	Serology — Referred to another Laboratory	
	<i>Schistosoma mansoni</i> <i>S. intercalatum</i>	Faeces	Microscopic examination for eggs	<i>S. mansoni</i> occurs in Africa, Middle East, South America and the Caribbean (Puerto Rico). Occasional human infections by the other species have been reported from Africa and India
		Scrapings from rectum	Parasitology	
		Blood, clotted or serum	Serology — Referred to another Laboratory	
Schistosomal dermatitis, swimmer's itch	Larvae of blood flukes of water birds		Examination of snails (following consultation)	Common in lakes in N. America
Sclerosing panencephalitis, subacute (See Measles)				
Scrub typhus, tsutsugamushi fever (See Rickettsial infections)				
Septicaemia	Numerous bacteria	Blood	Microscopic examination and culture	Culture should be taken from any suspect focus of infection
		Throat swabs		

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Septic sore throat (See Streptococcal infections; Pharyngitis, bacterial)				
Serum hepatitis (See Hepatitis, viral)				
Shigellosis (See Diarrhoea)				
Shingles, zoster (See Herpesvirus infections)				
Skin infections (See individual bacterial, mycotic, parasitic or viral infections)				
Sleeping sickness (See Trypanosomiasis, African)				
Soft chancre (See Chancroid)				
Sore throat (See Pharyngitis)				
South American blastomycosis (See Paracoccidioidomycosis)				
Splenomegaly, in parasitic infections (See Trypanosomiasis; Leishmaniasis; Malaria; Schistosomiasis)				
Sporotrichosis	<i>Sporothrix schenckii</i>	Pus from ulcerated lesions and aspirate from subcutaneous abscesses	Culture and conversion to the yeast form	Occurs commonly in Ontario
		Sputum, bronch washing		World-wide distribution. Soil Pathogen.
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Spotted fever (See Rickettsial infections)				
Staphylococcal infections (See also Food poisoning)	<i>Staphylococcus aureus</i>	Swabs from skin or other areas of sepsis	Microscopic examination and culture	
		Urine		
		Infected body fluids		
		Blood for culture	Blood culture	
		Cultures	Phage typing	
Sterility	Possibly <i>Chlamydia</i>	Semen, cervical swabs	Culture	Chlamydia testing available only on consultation.
St. Louis encephalitis (See Arbovirus infections)				
Streptococcal infections , including the specifically named infections of scarlet fever (scarlatina), erysipelas, epidemic streptococcal sore throat, puerperal sepsis, and streptococcal-related illnesses, such as acute glomerulonephritis and rheumatic fever	<i>Streptococcus pyogenes</i> and other groups of streptococci	Exudate from infected area, or body fluid	Microscopic examination and culture	
		Throat swab	Culture	
		Blood, clotted or serum	Antistreptolysin O titre (ASO) Serology	
Strongyloidiasis	<i>Strongyloides stercoralis</i>	Faeces, preserved	Microscopic examination for larvae	Samples to be submitted over several days. World-wide in distribution
		Duodenal contents by intubation, sputum		

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Swimming bath (pool) conjunctivitis	Inclusion conjunctivitis agent (See Chlamydial infections); <i>adenoviruses</i> (See Adenovirus infections)			
Syphilis	<i>Treponema pallidum</i> (the spirochaete of syphilis)	Exudate from primary lesion (chancre) or secondary lesion of skin or mucous membranes	Darkfield microscopic examination for <i>T. pallidum</i> ; DFA-TP on specially-prepared smears.	On special request, the FTA-ABS will be done on serum Consult instructions on DF kit requisition
		Blood, clotted or serum	Screen test, MHA-TP	FTA-ABS under certain circumstances. For TPI, consult Serology
		Cerebrospinal fluid	Screen test	VDRL test
Taeniasis	<i>Taenia saginata</i> (the beef tapeworm)	Faeces	Microscopic examination for eggs	World-wide in distribution
		Worm segments		
	<i>Taenia solium</i> (the pork tapeworm)	Faeces	Microscopic examination for eggs	World-wide in distribution
		Worm segments	Microscopic identification	
	<i>Cysticercosis</i> (pork tapeworm, larval stage)	Excised cysts	Microscopic examination of cyst	
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Tetanus, lock-jaw including tetanus neonatorum	<i>Clostridium tetani</i> (the tetanus bacillus)	Swabs from wounds and other lesions	Microscopic examination and culture	Anti-tetanus requires Serology requisition and an aliquot of blood. Referred to another Laboratory.
Throat infections (See Pharyngitis)				
Thrush (See Candidiasis)				
Tick-borne encephalitis (See Arbovirus infections)				
Tick-borne typhus or tick typhus (See Rickettsial infections)				
Tinea, ringworm (See Dermatophytosis)				
Tinea nigra	<i>Exophiala werneckii</i>	Skin scrapings	Microscopic examination and culture	
Tinea versicolor (See Pityriasis versicolor)				
Tonsillitis (See Pharyngitis; Streptococcal infections)				
Torch (See Toxoplasmosis, Rubella, Cytomegalovirus, Herpes)				
Torulopsis	<i>Torulopsis glabrata</i>	Urine	Culture	May be secondary invader in lymphomas, carcinomas, diabetes mellitus. Associated with steroid, antibiotic and immunosuppressive drugs
		Sputum		
Torulosis (See Cryptococcosis)				
Toxocariasis	<i>Toxocara canis</i> , <i>Toxocara cati</i>	Biopsy material (liver)	Microscopic examination for <i>Toxocara</i> larvae	Common in household pets
		Blood, clotted or serum	Serology	Referred to another Laboratory.

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Toxoplasmosis	<i>Toxoplasma gondii</i>	Biopsy material	Microscopic examination for parasites	World-wide in distribution
		Whole blood in anticoagulant		
		Blood, clotted or serum	Serology	IFA, ELISA (IgG & IgM).
Trachoma (See Chlamydial infections)				
Trichinosis	<i>Trichinella spiralis</i>	Biopsy material (gastrocnemius muscle)	Microscopic examination for larvae.	
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Trichomoniasis	<i>Trichomonas vaginalis</i>	Vaginal swab	Microscopic examination	World-wide in distribution
		Urethral swab	Microscopic examination	
		Urine, first portion of voiding	Microscopic examination	
		Prostatic secretions after massage	Microscopic examination	
Trichomycosis axillaris Trichomycosis pubis	<i>Corynebacterium tenuis</i>	Hair shafts with concretions	Microscopic examination	World-wide in distribution
Trichostrongyliasis (See also Hookworm disease)	<i>Trichostrongylus</i> species	Faeces	Microscopic examination for eggs	Occurs in USSR, Orient and Middle East
Trichuriasis	<i>Trichuris trichiura</i> (the human whipworm)	Faeces	Microscopic examination for eggs	Common in tropical and subtropical regions, less common elsewhere
Trypanosomiasis, African	<i>Trypanosoma rhodesiense</i> , <i>T. gambiense</i>	Blood films, thick and thin	Microscopic examination for parasites; culture	Occurs in Tropical Africa
		Lymph aspirated from nodes		
		Blood in anti-coagulant		
		Cerebrospinal fluid		
Trypanosomiasis, American (Chagas' disease)	<i>Trypanosoma cruzi</i>	Blood films, thick and thin	Microscopic examination for parasites; culture	Occurs in Mexico, Central and South America
		Lymph aspirated from nodes		
		Biopsy material (muscle)		
		Blood in anti-coagulant		
		Cerebrospinal fluid		
		Blood, clotted or serum	Serology	Referred to another Laboratory.
Tsutsugamushi fever (See Rickettsial infections)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES	
Tuberculosis, (TB), Mycobacteriosis Mycobacterial disease	<i>Mycobacterium tuberculosis</i> , <i>M. bovis</i> , other mycobacterial species	Sputum	Microscopic examination and culture	The tuberculin test is very valuable in diagnosis. Type and source of specimen is essential information.	
		Gastric washing			
		Bronchial or lung washing			
		Urine			
		Urine: bladder, ureteral or kidney			
		Fluid from a body cavity, joint, etc.			
		CSF			
		Biopsy material	Microscopic examination and culture	Identify source. Include location on body.	
		Aspirated material			
		Purulent exudate			
Scrapings from ulcerated lesion	Microscopic examination and culture	Done only if accompanied by suggestive history.			
Faeces					
Tularaemia	<i>Francisella (Pasteurella) tularensis</i>	Swabs from ulcer	Microscopic examination and culture	Disease of rabbits and rodents spread to man by direct contact, ticks or less commonly by water	
		Aspirated material from lymph nodes			
		Sputum			
		Blood, clotted or serum	Serology		
Typhoid fever, enteric fever, typhus abdominalis	<i>Salmonella typhi</i>	Faeces	Culture		
		Urine			
		Blood for culture	Blood culture		
Typhus fever (See Rickettsial infections)					
Upper respiratory illness (See Common cold)					
Urethritis (See also Gonococcal infections; Non-specific urethritis; Candidiasis; Trichomoniasis; Chlamydial infections)	Gonococcus	Urethral swabs	Microscopic examination and culture	Case history must accompany request for gonococcal complement-fixation test. CONSULT SEROLOGY FIRST	
		Blood, clotted or serum	Gonococcal complement-fixation test		
	Other bacterial	Urethral swabs	Microscopic examination and culture		
		Urethral scrapings			
	<i>Chlamydia trachomatis</i>	Urethral scrapings, Urethral swab	Enzyme immunoassay Chlamydia isolation Direct FA test		Enzyme immunoassay available. Other tests available only on consultation.
	<i>Herpes simplex</i> and other viruses	Urethral scrapings, Urethral swab	Virus isolation		
<i>Trichomonas vaginalis</i>	Urethral smears	Microscopic examination culture, staining			
Urinary tract infections, bacterial (See also Urethritis; Non-specific urethritis; Gonococcal infections; Nephritis, acute glomerulo-; Nocardiosis; Torulopsis)	Numerous bacterial species, including: <i>Escherichia coli</i> , <i>Klebsiella species</i> , <i>Proteus species</i> , <i>Pseudomonas aeruginosa</i> , <i>Streptococcus faecalis</i> , and <i>Staphylococcus aureus</i>	Urine	Urinalysis and colony count of bacteria	This is essentially a "screen" test. If the physician is in doubt about the result, a colony count on a freshly voided specimen is indicated	

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Vaccinal infection (See Poxvirus infections)				
Vaginitis (See also Cervicitis; Vulvovaginitis; Gonococcal infections; Trichomoniasis, Chlamydia infections)	Gonococcus	Cervical swab	Microscopic examination and culture	Chlamydia testing available only on consultation.
	Other bacteria (including Gardnerella)	Vaginal swab	Microscopic examination and culture	
	Candidiasis	Vaginal swab	Microscopic examination and culture	
	Herpes simplex and other viruses	Vaginal scrapings, Vaginal swab	Virus isolation	
	Trichomonas vaginalis	Vaginal smear	Microscopic examination	
	Chlamydia, trachomatis	Cervical swabs	Chlamydia isolation Direct FA test	
Varicella (See Herpesvirus infections)				
Varicelliform eruption, Kaposi's (See Herpesvirus infections; Poxvirus infections)				
Variola (smallpox) (See Poxvirus infections)				
Venezuelan equine-encephalitis (See Arbovirus infections)				
Verruca vulgaris (See Warts)				
Verrucous dermatitis (See Chromoblastomycosis)				
Verruga peruana (See Bartonellosis)				
Vesicular rickettsiosis, rickettsialpox (See Rickettsial infections)				
Vibrio infections (Cholera is listed separately)	Vibrio species	Faeces	Culture	
		Swab of wound		
Vincent's infection (angina)	Fusobacterium fusiforme concomitant with Borrelia vincenti	Throat swabs	Microscopic examination	
Viral hepatitis (See Hepatitis viral)				
Virus B of monkeys, Sabin's virus, or Herpesvirus simiae (See Herpesvirus infections)				
Visceral larva migrans (See Toxocariasis)				
Vulvovaginitis (See Candidiasis; Gonococcal infections; Herpesvirus infections)				
Warts, including verruca vulgaris (common wart), palmar and plantar warts, genital warts and laryngeal papillomas	Human papilloma virus, a member of the Papillomavirus (Papova virus) group	Biopsy material	Search for viruses by electron microscopy	
Well's disease (See Leptospirosis)				

DISEASE OR SYNDROME	CAUSAL AGENT(S)	SPECIMENS TO BE SUBMITTED	TESTS PERFORMED	NOTES
Western equine encephalitis (See Arbovirus infections)				
Whipworm disease (See Trichuriasis)				
Whooping cough, Pertussis	<i>Bordetella pertussis</i> , <i>Bordetella parapertussis</i>	Aspirated secretions from supra-laryngeal area Throat swabs Pernasal swab Blood, clotted and serum	Microscopic examination and culture Serology	 <i>Bordetella pertussis</i> only Referred to another Laboratory.
Wound infections	Different species of aerobic and anaerobic bacteria	Swabs from wound Pus Blood for culture	Microscopic examination and culture Blood culture	On rare occasions, botulism has occurred as a complication of wound infection
Wucheriasis (See Filariasis)				
Yaws	<i>Treponema pertenue</i>	Exudate from lesions Blood, clotted or serum	Darkfield examination for spirochaetes Tests for syphilis	
Yellow fever (See Arbovirus infections)				
Yersinia infections (See also Diarrhoea; Plague)	<i>Yersinia pestis</i> (synonym, <i>Pasturella pestis</i>); <i>Yersinia enterocolitica</i> (synonyms, <i>Pasteurella</i> and <i>Bacterium enterocoliticum</i>); <i>Yersinia pseudotuberculosis</i> (synonym, <i>Pasteurella pseudotuberculosis</i>)	Faeces Swabs from abscesses Autopsy tissues Blood for culture	Culture Microscopic examination and culture	Recognized as causes of enteritis, terminal ileitis, mesenteric lymphadenitis, acute arthritis with erythema nodosum, and pseudo-appendicitis.
Zoster (See Herpesvirus infections)				
Zygomycosis	Fungi in the class of Zygomycetes, especially: <i>Absidia</i> species, <i>Mucor</i> species, <i>Rhizopus</i> species, <i>Mortierella</i> species, <i>Basidiobolus</i> species, <i>Cunninghamella</i> species	Nasal swab Nasal scrapings Paranasal sinus scrapings Orbital scrapings Sputum Skin scrapings Biopsy tissue	Microscopic examination and culture	Most frequently associated with diabetes mellitus, leukemia, neutropenia, severe malnutrition, and treatment with antibiotics, corticosteroids and antimetabolites